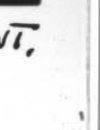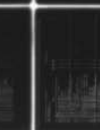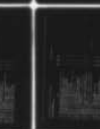AD-A044 645   AIR FORCE OCCUPATIONAL MEASUREMENT CENTER LACKLAND A--ETC F/G 5/9
                MISSILE CONTROL COMMUNICATIONS SYSTEMS SPECIALIST AFSC 36253.(U)
                SEP 77
UNCLASSIFIED   AFPT-90-362-222   NL

1 OF 2
ADA044645

END
DATE
FILMED
10-77
DDC

CONT.

OCCUPATIONAL SURVEY REPORT
ELECTRONIC PRINCIPLES

MISSILE CONTROL COMMUNICATIONS SYSTEMS
SPECIALIST

AFSC 36253

AFPT-90-362-222
15 September 1977

OCCUPATIONAL SURVEY BRANCH
USAF OCCUPATIONAL MEASUREMENT CENTER
LACKLAND AFB TEXAS 78236

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED

408 889

TABLE OF CONTENTS

PREFACE

This report presents a summary of the results of a detailed Air Force Electronic Principles Survey of the Missile Control Communications Systems Specialist, AFSC 36253.

The Electronic Principles Inventory (EPI) was developed by Major Thomas J. O'Connor and Mr. Hendrick W. Ruck and the survey data were analyzed by Captain Frederick B. Bower, Jr. All are members of the Occupational Survey Branch, USAF Occupational Measurement Center, Lackland AFB, Texas.

Computer programs for analyzing the data were designed by Dr. Raymond E. Christal, Occupational and Manpower Research Division, Air Force Human Resources Laboratory (AFHRL), and were written by the Project Analysis and Programming Branch, Computational Sciences Division, AFHRL.

Distribution of this report is made upon request to the USAF Occupational Measurement Center, attention of the Chief, Occupational Survey Branch (OMY), Lackland AFB, Texas 78236.

This report has been reviewed and is approved.

JAMES A. TURNER, JR., Colonel, USAF
Commander
USAF Occupational Measurement Center

WALTER E. DRISKILL, Ph.D.
Chief, Occupational Survey Branch
USAF Occupational Measurement Center

2

ELECTRONIC PRINCIPLES OCCUPATIONAL SURVEY REPORT
MISSILE CONTROL COMMUNICATIONS SYSTEMS SPECIALIST
AFSC 36253

INTRODUCTION

This report summarizes the results of the administration of the Electronic Principles Inventory to airmen assigned as Missile Control Communications Systems Specialist (AFSC 36253). The data for this report were collected during the period April through June 1977.

This report describes: (1) development and administration of the survey instrument; and (2) electronic principles used by DAFSC 5-skill level personnel both CONUS and overseas and assigned to selected major commands.

DEVELOPMENT OF THE ELECTRONIC PRINCIPLES INVENTORY (EPI)

The EPI was developed by personnel from the Occupational Survey Branch who were well qualified in theoretical physics and electronics, as well as in task analysis and survey development. Over 300 maintenance personnel from SAC, TAC, ADC, MAC, and AFCS participated in the development of the inventory. Representing the five ATC training centers, electronics experts who averaged 12 years of maintenance experience and four years of electronic principles instruction experience spent several weeks refining the EPI. In addition, personnel at the Electrical Engineering Department of the USAF Academy and the Air Force Human Resources Laboratory were consulted during the development of the inventory.

The final version of the EPI used in this survey contained 1,257 items in 62 subject matter areas covering all electronic principles training given at the five ATC technical training centers. Table 1 lists the 62 subject areas.

ADMINISTRATION

The Electronic Principles Inventory was administered by mail to AFSC 36253 airmen worldwide. Responses from 61 individuals represented 69 percent of the total of all AFSC 36253 personnel. Table 2 shows the percentage distribution by major command of the survey incumbents.

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED

TABLE 1

EPI SUBJECT AREAS

SEQUENCE OF SUBJECT AREAS	SUBJECT AREA TITLE	BEGINNING ITEM NUMBER	GPSUM PAGE NUMBER
1	MATHEMATICS	A1	2
2	DIRECT CURRENT AND VOLTAGE	A15	2
3	RESISTANCE	A24	2
4	MULTIMETER USES	B52	3
5	ALTERNATING CURRENT	B61	4
6	INDUCTORS AND INDUCTIVE REACTANCE	B67	4
7	CAPACITORS AND CAPACITIVE REACTANCE	C92	5
8	TRANSFORMERS	C128	6
9	MAGNETISM	C171	7
10	RCL CIRCUITS	D185	8
11	SERIES AND PARALLEL RESONANCE (TIME CONSTANTS)	D229	10
12	FILTERS	D239	10
13	COUPLING	E261	11
14	SOLDERING	E273	11
15	RELAYS	E295	12
16	MICROPHONES	F314	12
17	SPEAKERS	F327	13
18	OSCILLOSCOPES	F342	13
19	SEMICONDUCTOR DIODES	G354	13
20	TRANSISTORS	G404	15
21	TRANSISTOR AMPLIFIERS	G428	16
22	SOLID-STATE SPECIAL PURPOSE DEVICES	H477	19
23	POWER SUPPLIES	H483	19
24	OSCILLATORS	H512	19
25	MULTIVIBRATORS	I539	20
26	LIMITERS AND CLAMPERS	I555	21
27	ELECTRON TUBES	I565	21
28	ELECTRON TUBE AMPLIFIERS AND CIRCUITS	J609	22
29	SPECIAL PURPOSE ELECTRON TUBES	J616	23
30	HETERODYNING, MODULATION, AND DEMODULATION	J632	23
31	AM SYSTEMS	K638	23
32	FM SYSTEMS	K666	24

TABLE 1 (CONTINUED)

EPI SUBJECT AREAS

SEQUENCE OF SUBJECT AREAS	SUBJECT AREA TITLE	BEGINNING ITEM NUMBER	GPSUM PAGE NUMBER
33	NUMBERING SYSTEMS	K685	25
34	LOGIC FUNCTIONS	L695	25
35	BOOLEAN EQUATIONS	L708	26
36	COUNTERS	L733	27
37	TIMING CIRCUITS	M757	27
38	USE OF SIGNAL GENERATORS	M769	28
39	MOTORS AND GENERATORS	M779	28
40	METER MOVEMENTS	N808	29
41	SATURABLE REACTORS AND MAGNETIC AMPLIFIERS	N818	29
42	WAVESHAPING CIRCUITS	N834	30
43	SINGLE SIDEBAND SYSTEMS	O845	30
44	PULSE MODULATION SYSTEMS	O875	31
45	ANTENNAS	O914	32
46	TRANSMISSION LINES	P953	34
47	WAVEGUIDES AND CAVITY RESONATORS	P984	35
48	MICROWAVE AMPLIFIERS AND OSCILLATORS	P1034	37
49	REGISTERS	Q1110	39
50	STORAGE DEVICES	Q1117	40
51	DIGITAL TO ANALOG CONVERTERS	Q1126	40
52	PHANTASTRONS	Q1140	41
53	SCHMITT TRIGGERS	R1141	41
54	CABLE FABRICATION	R1144	41
55	INPUT/OUTPUT DEVICES	S1146	41
56	PHOTO SENSITIVE DEVICES	S1149	41
57	SYNCHRONOUS VIBRATIONS (CHOPPER CIRCUITS)	S1150	41
58	INFRARED	T1159	41
59	LASERS	T1186	42
60	DISPLAY TUBES	T1220	43
61	PROGRAMMING	U1234	43
62	DB AND POWER RATIOS	U1255	44

TABLE 2

COMMAND REPRESENTATION OF SURVEY SAMPLE

| | 36253 | |
COMMAND	PERCENT ASSIGNED	PERCENT OF SAMPLE
ATC	3	2
AFCS	96	95
SAC	1	-
OTHER		3
TOTAL	100	100

Total Assigned - 119
Total Sampled - 61
Percent Sampled - 69%

PRESENTATON OF RESULTS

Personnel responded "yes" or "no" to the 1,257 electronic principles questions as related to their present job. A Group Summary (GPSUM) computer printout is provided in the Appendix portion of this report. Page 1 of the GPSUM lists the four selected groups identified for this report. Pages 2-44 show the percentage of the incumbents responding to the EPI items. The computer program results display the percent members answering "yes" to the subject area questions. The reader can locate a specific subject area by referring to the Appendix page number as listed in Table 1. For example, the Transformers area results are given on page 6 of the GPSUM. The percentage of survey respondents indicating use of specific electronic principles ranged from high in areas such as Alternating Current (p. 4) and Soldering (pp. 11-12) to low in areas such as Infrared and Lasers (pp. 41-43). Additional AFSC 362X3 data can be obtained upon request to the Chief, Occupational Survey Branch (OMY).

APPENDIX

7

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS   GPSUM3 PAGE   1

TABULATION OF ELECTRONIC PRINCIPLES UTILIZATION DATA FOR SELECTED GROUPS
IN THE 362X3 CAREER FIELD.

REPORTS ON THE FOLLOWING GROUPS WERE REQUESTED

GROUP IDENTITY = SPC051 ALL AIRMEN DAFSC 36253   CONTAINING   61 MEMBERS.
GROUP IDENTITY = SPC052 ALL AIRMEN DAFSC 36253 STATIONED IN CONUS CONTAINING   61 MEMBERS.
GROUP IDENTITY = SPC054 ALL AIRMEN DAFSC 36253 ASSIGNED TO AFCS   CONTAINING   58 MEMBERS.

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK		SPC 051	SPC 052	SPC 054
MATHEMATICS				
1 A1-01 IN YOUR PRESENT JOB, DO YOU USE INSTRUMENTS, SUCH AS METERS OR OSCILLOSCOPES, IN WHICH IT IS NECESSARY TO AMPLIFY OR ATTENUATE VOLTAGE, RESISTANCE, ETC., BY POWERS OF 10.		62	62	62
2 A1-02 DO YOU USE PUBLICATIONS, SUCH AS A TECHNICAL ORDERS OR MAINTENANCE MANUALS, IN WHICH IT IS NECESSARY FOR YOU TO MULTIPLY OR DIVIDE BY A POWER OF 10 BEFORE YOU CAN APPLY THE INFORMATION FROM THE PUBLICATION IN A USEFUL WAY ON THE JOB.		15	15	14
3 A1-03 DO YOU REARRANGE AND SOLVE FORMULAS OR EQUATIONS.		25	25	21
4 A1-04 DO YOU CALCULATE THE SQUARE ROOT OF A QUANTITY.		5	5	3
5 A1-05 DO YOU SOLVE FOR UNKNOWN QUANTITIES.		16	16	17
6 A1-06 DO YOU CONVERT NUMBERS TO LOGARITHMS.		5	5	5
7 A1-07 DO YOU USE LOGARITHM TABLES IN ANY TYPE OF CALCULATIONS.		3	3	3
8 A1-08 DO YOU SOLVE QUADRATIC EQUATIONS.		3	3	3
9 A1-09 DO YOU USE THE NATURAL SYSTEM OF LOGARITHMS.		2	2	2
10 A1-10 DO YOU PERFORM CALCULATIONS ON VECTOR QUANTITIES.		2	2	2
11 A1-11 DO YOU WORK WITH TRIGONOMETRIC FUNCTIONS SUCH AS SINE, COSINE, OR TANGENT.		7	7	5
12 A1-12 DO YOU DETERMINE AREAS OF PLANE FIGURES.		3	3	3
13 A1-13 DO YOU SOLVE OR USE SIMULTANEOUS EQUATIONS.		3	3	3
14 A1-14 DO YOU SOLVE OR USE PROPORTIONS.		7	7	7
DIRECT CURRENT AND VOLTAGE				
15 A2-01 DO YOU USE THE TERM VOLTAGE OR VOLT (V).		93	93	93
16 A2-02 DO YOU USE THE TERM ELECTROMOTIVE FORCE (EMF).		31	31	29
17 A2-03 DO YOU USE THE TERM OHM.		93	93	93
18 A2-04 DO YOU USE THE TERM ION.		10	10	7
19 A2-05 DO YOU USE THE TERM DYNE.		2	2	2
20 A2-06 DO YOU USE THE TERM AMPERE.		93	93	93
21 A2-07 DO YOU USE THE TERM NEUTRON.		13	13	10
22 A2-08 DO YOU USE THE TERM COULOMB.		8	8	9
23 A2-09 DO YOU USE THE TERM PROTON.		11	11	9
RESISTANCE				
24 A3-01 DO YOU WORK WITH RESISTORS IN YOUR PRESENT JOB.		82	82	81
25 A3-02 DO YOU INSPECT RESISTORS.		85	85	84
26 A3-03 DO YOU CLEAN RESISTORS.		57	57	55
27 A3-04 DO YOU ADJUST RESISTORS.		75	75	74
28 A3-05 DO YOU CHECK OHMIC VALUE OR RESISTORS.		87	87	86
29 A3-06 DO YOU REMOVE OR REPLACE RESISTORS.		84	84	84
30 A3-07 DO YOU USE OR REFER TO TEMPERATURE COEFFICIENTS FOR RESISTORS ON ANY TASKS YOU PERFORM.		15	15	14
31 A3-08 DO YOU USE OR REFER TO RESISTOR SYMBOLS SUCH AS FIXED RESISTOR SYMBOLS, OR TAPPED RESISTOR SYMBOLS.		80	80	79
32 A3-09 DO YOU IDENTIFY OR CLASSIFY THE RESISTORS YOU WORK WITH AS CARBON, FIXED WIRE, SLIDE TAP, RHEOSTAT, OR POTENTIOMETER.		84	84	83
33 A3-10 DO YOU USE RESISTOR COLOR CODES WHICH INDICATE OHMIC VALUE OF RESISTANCE.		84	84	84

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	DY-TSK	SPC 051	SPC 052	SPC 054
A	34 A3-11 DO YOU USE RESISTOR COLOR CODES WHICH INDICATE TOLERANCE.	70	70	71
A	35 A3-12 DO YOU USE RESISTOR COLOR CODES WHICH INDICATE FAILURE RATE.	26	26	26
A	36 A3-13 DO YOU MAKE DECISIONS IN WHICH YOU MUST DETERMINE HOW TWO OR MORE BATTERIES MUST BE CONNECTED TOGETHER TO ACHIEVE A SPECIFIC VOLTAGE.	46	46	47
A	37 A3-14 DO YOU USE OR REFER TO THE SCHEMATIC SYMBOLS WHICH REPRESENT BATTERIES, FUSES, CONDUCTORS, LAMPS, OR SWITCHES	93	93	93
A	38 A3-15 DO YOU CALCULATE TOTAL RESISTANCE FOR SERIES RESISTIVE CIRCUITS.	46	46	45
A	39 A3-16 DO YOU CALCULATE TOTAL CURRENT FOR SERIES RESISTIVE CIRCUITS.	39	39	38
A	40 A3-17 DO YOU CALCULATE INDIVIDUAL VOLTAGE DROPS FOR SERIES RESISTIVE CIRCUITS.	44	44	43
A	41 A3-18 DO YOU CALCULATE POWER DISSIPATION FOR SERIES RESISTIVE CIRCUITS.	36	36	36
A	42 A3-19 DO YOU CALCULATE TOTAL RESISTANCE FOR SERIES PARALLEL RESISTIVE CIRCUITS.	48	48	47
A	43 A3-20 DO YOU CALCULATE TOTAL CURRENT FOR SERIES PARALLEL RESISTIVE CIRCUITS.	39	39	38
A	44 A3-21 DO YOU CALCULATE INDIVIDUAL VOLTAGE DROPS FOR SERIES PARALLEL RESISTIVE CIRCUITS.	43	43	41
A	45 A3-22 DO YOU CALCULATE INDIVIDUAL BRANCH CURRENTS FOR SERIES PARALLEL RESISTIVE CIRCUITS.	41	41	40
A	46 A3-23 DO YOU CALCULATE POWER DISSIPATION FOR SERIES PARALLEL RESISTIVE CIRCUITS.	36	36	36
A	47 A3-24 DO YOU CALCULATE TOTAL RESISTANCE FOR PARALLEL RESISTIVE CIRCUITS.	43	43	41
A	48 A3-25 DO YOU CALCULATE TOTAL CURRENT FOR PARALLEL RESISTIVE CIRCUITS.	36	36	34
A	49 A3-26 DO YOU CALCULATE INDIVIDUAL VOLTAGE DROPS FOR PARALLEL RESISTIVE CIRCUITS.	38	38	36
A	50 A3-27 DO YOU CALCULATE INDIVIDUAL BRANCH CURRENTS FOR PARALLEL RESISTIVE CIRCUITS.	36	36	34
A	51 A3-28 DO YOU CALCULATE POWER DISSIPATION FOR PARALLEL RESISTIVE CIRCUITS.	34	34	34
B	52 B1-01 DO YOU MEASURE RESISTANCE.	92	92	91
B	53 B1-02 DO YOU REPAIR OHMMETERS.	5	5	5
B	54 B1-03 DO YOU MEASURE VOLTAGE.	93	93	93
B	55 B1-04 DO YOU REPAIR VOLTMETERS.	5	5	5
B	56 B1-05 DO YOU REPAIR AMMETERS.	3	3	3
B	57 B1-06 DO YOU MEASURE CURRENT.	70	70	69
B	58 B1-07 DO YOU USE MULTIMETERS.	93	93	93
B	59 B1-08 DO YOU DIRECTLY USE A QUANTITY OF CHARGE CALLED A COULOMB.	3	3	3
B	60 B1-09 DO YOU READ SCHEMATICS.	93	93	93

MULTIMETER USES

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK	SPC 051	SPC 052	SPC 054
61 B2-01 DO YOU USE OR REFER TO THE TERM EFFECTIVE VOLTAGE (RMS).	74	74	72
62 B2-02 DO YOU USE OR REFER TO THE TERM PEAK VOLTAGE.	80	80	79
63 B2-03 DO YOU USE OR REFER TO THE TERM AVERAGE VOLTAGE (DC).	70	70	69
64 B2-04 DO YOU USE OR REFER TO THE TERM WAVE LENGTH.	62	62	62
65 B2-05 DO YOU USE OR REFER TO THE TERM FREQUENCY.	84	84	83
66 B2-06 DO YOU USE OR REFER TO THE TERM INSTANTANEOUS VALUE.	15	15	14
67 B3-01 DO YOU WORK WITH INDUCTORS OR CIRCUITS CONTAINING INDUCTORS, CHOKES, OR CHOKE COILS IN YOUR PRESENT JOB.	48	48	48
68 B3-02 DO YOU INSPECT INDUCTORS.	46	46	45
69 B3-03 DO YOU CLEAN INDUCTORS.	26	26	26
70 B3-04 DO YOU ADJUST INDUCTORS.	25	25	22
71 B3-05 DO YOU REMOVE OR REPLACE INDUCTORS.	46	46	47
72 B3-06 DO YOU USE OR REFER TO INDUCTANCE.	31	31	29
73 B3-07 DO YOU USE OR REFER TO HENRIES.	20	20	17
74 B3-08 DO YOU USE OR REFER TO INDUCTIVE REACTANCE.	26	26	26
75 B3-09 DO YOU USE OR REFER TO COPPER LOSS IN INDUCTORS.	7	7	5
76 B3-10 DO YOU USE OR REFER TO HYSTERESIS LOSS IN INDUCTORS.	8	8	9
77 B3-11 DO YOU USE OR REFER TO EDDY CURRENT LOSS IN INDUCTORS.	11	11	12
78 B3-12 DO YOU USE OR REFER TO THE GENERAL RULE THAT INDUCTANCE IS PROPORTIONAL TO THE SQUARE OF THE NUMBER OF TURNS OF THE COIL.	13	13	12
79 B3-13 DO YOU USE OR REFER TO THE GENERAL RULE THAT THE IN-DUCTANCE OF A COIL IS DIRECTLY PROPORTIONAL TO THE CROSS SECTIONAL AREA OF THE CORE.	10	10	10
80 B3-14 DO YOU USE OR REFER TO THE GENERAL RULE THAT THE INDUCTANCE OF A COIL IS INVERSELY PROPORTIONAL TO ITS LENGTH.	10	10	10
81 B3-15 DO YOU USE OR REFER TO THE GENERAL RULE THAT THE INDUCTANCE OF A COIL IS DIRECTLY PROPORTIONAL TO THE PERMEABILITY OF THE CORE MATERIAL.	7	7	7
82 B3-16 DO YOU CALCULATE INDUCTANCE FOR PARTICULAR INDUCTORS USING FORMULAS.	15	15	14
83 B3-17 DO YOU CALCULATE THE TOTAL INDUCTANCE FOR INDUCTANCE IN SERIES.	13	13	12
84 B3-18 DO YOU CALCULATE THE TOTAL INDUCTANCE FOR INDUCTORS IN PARALLEL.	15	15	14
85 B3-19 DO YOU CALCULATE THE TOTAL INDUCTANCE FOR INDUCTORS IN SERIES-PARALLEL CIRCUITS.	13	13	12
86 B3-20 DO YOU USE OR REFER TO THE GENERAL RULE THAT CURRENT LAGS VOLTAGE IN AC INDUCTOR CIRCUITS.	15	15	14
87 B3-21 DO YOU CALCULATE INDUCTIVE REACTANCE.	13	13	14
88 B3-22 DO YOU USE OR REFER TO THE GENERAL RULE THAT INDUCTIVE REACTANCE IS DIRECTLY PROPORTIONAL TO FREQUENCY.	13	13	14
89 B3-23 DO YOU WORK WITH POWER INDUCTORS.	15	15	16
90 B3-24 DO YOU WORK WITH AUDIO FREQUENCY INDUCTORS.	33	33	33
91 B3-25 DO YOU WORK WITH RADIO FREQUENCY INDUCTORS.	8	8	7

ALTERNATING CURRENT

INDUCTORS AND INDUCTIVE REACTANCE

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

CAPACITORS AND CAPACITIVE REACTANCE

DY-TSK	SPC 051	SPC 052	SPC 054
92 C1-01 DO YOU WORK WITH CAPACITORS OR CIRCUITS CONTAINING CAPACITORS IN YOUR PRESENT JOB.	85	85	84
93 C1-02 DO YOU INSPECT CAPACITORS.	80	80	79
94 C1-03 DO YOU CLEAN CAPACITORS.	56	56	55
95 C1-04 DO YOU ADJUST CAPACITORS.	28	28	28
96 C1-05 DO YOU TEST CAPACITORS.	74	74	74
97 C1-06 DO YOU DISCHARGE CAPACITORS.	69	69	67
98 C1-07 DO YOU REMOVE OR REPLACE CAPACITORS.	77	77	78
99 C1-08 DO YOU USE OR REFER TO DISTRIBUTED CAPACITANCE.	13	13	12
100 C1-09 DO YOU USE OR REFER TO ORBITAL STRESS OF ELECTRONS IN A DIELECTRIC.	2	2	2
101 C1-10 DO YOU USE OR REFER TO FARADS, MICROFARADS, OR PICOFARADS.	56	56	55
102 C1-11 DO YOU USE OR REFER TO CAPACITANCE.	70	70	72
103 C1-12 DO YOU USE OR REFER TO DIELECTRIC CONSTANT	5	5	5
104 C1-13 DO YOU USE OR REFER TO WORKING VOLTAGE RATING OF CAPACITORS	48	48	47
105 C1-14 DO YOU USE OR REFER TO CAPACITIVE REACTANCE	26	26	26
106 C1-15 DO YOU USE OR REFER TO CAPACITOR COLOR CODES	14	16	17
107 C1-16 DO YOU WORK WITH CAPACITORS IN DC CIRCUITS	85	85	84
108 C1-17 DO YOU WORK WITH CAPACITORS IN AC CIRCUITS	64	64	64
109 C1-18 DO YOU WORK WITH CAPACITORS IN CIRCUITS WITH BOTH DC AND AC	64	64	64
110 C1-19 DO YOU WORK WITH CAPACITORS IN DON'T REMEMBER WHICH CIRCUITS	18	18	17
111 C1-20 DO YOU CALCULATE CAPACITANCE FOR PARTICULAR CAPACITORS USING FORMULAS	8	8	9
112 C1-21 DO YOU USE OR REFER TO THE GENERAL RULE THAT CAPACITANCE OF A CAPACITOR IS DIRECTLY PROPORTIONAL TO THE DIELECTRIC CONSTANT	5	5	5
113 C1-22 DO YOU USE OR REFER TO THE GENERAL RULE THAT CAPACITANCE OF A CAPACITOR IS INVERSELY PROPORTIONAL TO THE DIELECTRIC THICKNESS	7	7	7
114 C1-23 DO YOU CALCULATE THE TOTAL CAPACITANCE OF CAPACITORS IN SERIES	15	15	16
115 C1-24 DO YOU CALCULATE THE TOTAL CAPACITANCE OF CAPACITORS IN PARALLEL	15	15	14
116 C1-25 DO YOU CALCULATE THE TOTAL CAPACITANCE OF CAPACITORS IN SERIES-PARALLEL CIRCUITS	16	16	16
117 C1-26 DO YOU USE OR REFER TO THE GENERAL RULE THAT CURRENT DOES NOT FLOW THROUGH CAPACITORS, IT ONLY APPEARS TO DO SO	26	26	24
118 C1-27 DO YOU USE OR REFER TO THE GENERAL RULE THAT CURRENT LEADS VOLTAGE IN AC CAPACITOR CIRCUITS	15	15	16
119 C1-28 DO YOU USE OR REFER TO THE GENERAL RULE THAT CAPACITIVE REACTANCE IS INVERSELY PROPORTIONAL TO FREQUENCY	10	10	10
120 C1-29 DO YOU CALCULATE CAPACITIVE REACTANCE	10	10	10

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

TRANSFORMERS

DY-TSK	SPC 051	SPC 052	SPC 054
121 C1-30 DO YOU WORK WITH ROTOR-STATOR (VARIABLE) CAPACITORS	11	11	12
122 C1-31 DO YOU WORK WITH COMPRESSION (TRIMMER) CAPACITORS	7	7	7
123 C1-32 DO YOU WORK WITH ELECTROLYTIC (FIXED) CAPACITORS	69	69	69
124 C1-33 DO YOU WORK WITH PAPER (FIXED) CAPACITORS	43	43	41
125 C1-34 DO YOU WORK WITH MICA (FIXED) CAPACITORS	43	43	43
126 C1-35 DO YOU WORK WITH CERAMIC (FIXED) CAPACITORS	57	57	59
127 C1-36 DO YOU WORK WITH DON'T REMEMBER WHICH TYPE OF CAPACITORS	28	28	26
128 C2-01 DO YOU WORK WITH TRANSFORMERS IN YOUR PRESENT JOB	70	70	71
129 C2-02 DO YOU INSPECT TRANSFORMERS	75	75	74
130 C2-03 DO YOU CLEAN TRANSFORMERS	47	49	50
131 C2-04 DO YOU ADJUST TRANSFORMERS	34	34	33
132 C2-05 DO YOU TROUBLESHOOT TRANSFORMERS	64	64	64
133 C2-06 DO YOU REMOVE OR REPLACE COMPLETE TRANSFORMERS	75	75	76
134 C2-07 DO YOU REMOVE OR REPLACE TRANSFORMER PARTS, SUCH AS THE PRIMARY WINDING	7	7	7
135 C2-08 DO YOU MAKE A DISTINCTION BETWEEN MUTUAL INDUCTION AND MUTUAL INDUCTANCE (M)	2	2	2
136 C2-09 DO YOU USE THE SYMBOL FOR MUTUAL INDUCTANCE, M	2	2	2
137 C2-10 DO YOU REFER TO OR USE THE COEFFICIENT OF COUPLING WHEN WORKING WITH TRANSFORMERS	3	3	3
138 C2-11 DO YOU CALCULATE TURNS RATIOS FOR TRANSFORMERS USING CURRENT OR VOLTAGE RATIOS	20	20	19
139 C2-12 DO YOU REFER TO REFLECTED IMPEDANCE WHEN WORKING WITH TRANSFORMERS	13	13	14
140 C2-13 DO YOU CALCULATE IMPEDANCE INTERACTIONS FOR TRANSFORMERS	7	7	7
141 C2-14 DO YOU WORK WITH AUTOTRANSFORMERS	16	16	16
142 C2-15 DO YOU WORK WITH POWER TRANSFORMERS	54	54	53
143 C2-16 DO YOU WORK WITH AUDIO TRANSFORMERS	59	59	57
144 C2-17 DO YOU WORK WITH RADIO FREQUENCY TRANSFORMERS	8	8	7
145 C2-18 DO YOU WORK WITH DON'T REMEMBER WHAT TYPE OF TRANSFORMERS	21	21	19
146 C2-19 DO YOU CHECK TRANSFORMERS FOR OPEN WINDINGS BY MEASURING RESISTANCE	67	67	66
147 C2-20 DO YOU CHECK TRANSFORMERS FOR SHORTED WINDINGS BY MEASURING RESISTANCE	64	64	62
148 C2-21 DO YOU CHECK TRANSFORMERS FOR SHORTED WINDINGS BY MEASURING OUTPUT VOLTAGES	52	52	50
149 C2-22 DO YOU MEASURE RESISTANCE OF TRANSFORMER WINDINGS TO DETERMINE WHETHER A TRANSFORMER HAS A STEP-UP OR STEP-DOWN TURNS RATIO	28	28	28
150 C2-23 DO YOU MEASURE OUTPUT VOLTAGE OF TRANSFORMERS TO DETERMINE WHETHER A TRANSFORMER HAS A STEP-UP OR STEP-DOWN TURNS RATIO	34	34	33
151 C2-24 DO YOU REFER TO BASIC TRANSFORMER SCHEMATIC SYMBOLS FOR TRANSFORMERS	64	64	62

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK	SPC 051	SPC 052	SPC 054
C 152 C2-25 DO YOU REFER TO MULTIPLE SECONDARY-WINDINGS SCHEMATIC SYMBOLS FOR TRANSFORMERS	49	49	47
C 153 C2-26 DO YOU REFER TO MULTIPLE TAP SCHEMATIC SYMBOLS FOR TRANSFORMERS	48	48	47
C 154 C2-27 DO YOU REFER TO CENTER TAP SCHEMATIC SYMBOLS FOR TRANSFORMERS	57	57	55
C 155 C2-28 DO YOU REFER TO AIR CORE SCHEMATIC SYMBOLS FOR TRANSFORMERS	36	36	36
C 156 C2-29 DO YOU REFER TO IRON CORE SCHEMATIC SYMBOLS FOR TRANSFORMERS	44	44	43
C 157 C2-30 DO YOU REFER TO COMBINATIONS OF THE ABOVE SCHEMATIC SYMBOLS FOR TRANSFORMERS	44	44	43
C 158 C2-31 DO YOU DETERMINE PHASE RELATIONSHIPS BETWEEN SECONDARY AND PRIMARY VOLTAGES OF TRANSFORMERS USING SCHEMATIC SYMBOLS	13	13	14
C 159 C2-32 DO YOU DETERMINE OR REFER TO THE TYPE OF CORE IN TRANSFORMERS YOU WORK WITH	10	10	10
C 160 C2-33 DO YOU REFER TO OR USE THE GENERAL RULE THAT THE TURNS RATIO OF A TRANSFORMER IS EQUAL TO THE VOLTAGE RATIO	21	21	21
C 161 C2-34 DO YOU USE OR REFER TO STEP-UP OR STEP-DOWN RATIOS FOR TRANSFORMERS	38	38	36
C 162 C2-35 DO YOU CALCULATE VOLTAGE RATIOS FOR TRANSFORMERS USING TURNS RATIOS	15	15	14
C 163 C2-36 DO YOU CALCULATE CURRENT RATIOS FOR TRANSFORMERS USING TURNS RATIOS	15	15	16
C 164 C2-37 DOES YOUR JOB INVOLVE ANY TASKS DEALING WITH THREE PHASE TRANSFORMERS	5	5	5
C 165 C2-38 DO YOU INSPECT THREE PHASE TRANSFORMERS	3	3	3
C 166 C2-39 DO YOU CLEAN OR LUBRICATE THREE PHASE TRANSFORMERS	3	3	3
C 167 C2-40 DO YOU ADJUST THREE PHASE TRANSFORMERS	3	3	3
C 168 C2-41 DO YOU TROUBLESHOOT THREE PHASE TRANSFORMERS	3	3	3
C 169 C2-42 DO YOU REMOVE OR REPLACE COMPLETE THREE PHASE TRANSFORMERS	3	3	3
C 170 C2-43 DO YOU REMOVE OR REPLACE THREE PHASE TRANSFORMER PARTS SUCH AS WINDINGS	2	2	2
C 171 C3-01 DO YOU USE OR REFER TO PERMANENT MAGNETS	23	23	24
C 172 C3-02 DO YOU USE OR REFER TO TEMPORARY MAGNETS	18	18	17
C 173 C3-03 DO YOU USE OR REFER TO RETENTIVITY OF MAGNETIC MATERIALS	5	5	5
C 174 C3-04 DO YOU USE OR REFER TO RELUCTANCE OF MAGNETIC MATERIALS	7	7	7
C 175 C3-05 DO YOU USE OR REFER TO PERMEABILITY OF MAGNETIC MATERIALS	7	7	7
C 176 C3-06 DO YOU USE OR REFER TO RESIDUAL MAGNETISM	15	15	14
C 177 C3-07 DO YOU USE OR REFER TO MAGNETIC LINES OF FORCE OR FLUX	13	13	12
C 178 C3-08 DO YOU USE OR REFER TO WEBER'S THEORY OF MAGNETISM	5	5	5

MAGNETISM

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

RCL CIRCUITS

DY-TSK		SPC 051	SPC 052	SPC 053	SPC 054
179	C3-09 DO YOU USE OR REFER TO DOMAIN THEORY OF MAGNETISM	5	5	5	5
180	C3-10 DO YOU USE OR REFER TO MAGNETIC INDUCTION	13	13	13	12
181	C3-11 DO YOU USE OR REFER TO FLUX DENSITY	7	7	7	7
182	C3-12 DO YOU USE OR REFER TO THE GENERAL RULE THAT FOR MAGNETIC POLES, LIKE POLES REPEL AND UNLIKE POLES ATTRACT	33	33	33	33
183	C3-13 DO YOU USE THE LEFT HAND THUMB RULE TO FIND THE DIRECTION OF MAGNETIC FIELDS ABOUT STRAIGHT WIRES	15	15	15	16
184	C3-14 DO YOU USE THE LEFT HAND THUMB RULE TO FIND THE NORTH POLE OF A CURRENT CARRYING COIL	15	15	15	16
185	DI-01 DO YOU WORK WITH RC, LR, RCL CIRCUITS IN YOUR PRESENT JOB	25	25	25	24
186	DI-02 DO YOU USE OR REFER TO VECTORS WHEN WORKING WITH RCL CIRCUITS	2	2	2	2
187	DI-03 DO YOU USE OR REFER TO PYTHAGOREAN THEOREM WHEN WORKING WITH RCL CIRCUITS	3	3	3	3
188	DI-04 DO YOU USE OR REFER TO SINE WHEN WORKING WITH RCL CIRCUITS	3	3	3	3
189	DI-05 DO YOU USE OR REFER TO COSINE WHEN WORKING WITH RCL CIRCUITS	3	3	3	3
190	DI-06 DO YOU USE OR REFER TO TANGENT WHEN WORKING WITH RCL CIRCUITS	3	3	3	3
191	DI-07 DO YOU USE OR REFER TO WATTS WHEN WORKING WITH RCL CIRCUITS	7	7	7	5
192	DI-08 DO YOU USE OR REFER TO TRUE POWER (PT) WHEN WORKING WITH RCL CIRCUITS	2	2	2	2
193	DI-09 DO YOU USE OR REFER TO MAXIMUM POWER (PM) WHEN WORKING WITH RCL CIRCUITS	2	2	2	2
194	DI-10 DO YOU USE OR REFER TO AVERAGE POWER (PAVE) WHEN WORKING WITH RCL CIRCUITS	7	7	7	7
195	DI-11 DO YOU USE OR REFER TO APPARENT POWER (PA) WHEN WORKING WITH RCL CIRCUITS	2	2	2	2
196	DI-12 DO YOU USE OR REFER TO POWER FACTOR (PF) WHEN WORKING WITH RCL CIRCUITS	3	3	3	3
197	DI-13 DO YOU USE OR REFER TO RESONANT CIRCUITS WHEN WORKING WITH RCL CIRCUITS	8	8	8	7
198	DI-14 DO YOU USE OR REFER TO BANDWIDTH WHEN WORKING WITH RCL CIRCUITS	10	10	10	9
199	DI-15 DO YOU USE OR REFER TO SELECTIVITY WHEN WORKING WITH RCL CIRCUITS	8	8	8	7
200	DI-16 DO YOU USE OR REFER TO RESONANT FREQUENCY WHEN WORKING WITH RCL CIRCUITS	10	10	10	9
201	DI-17 DO YOU USE OR REFER TO HALF POWER POINTS WHEN WORKING WITH RCL CIRCUITS	0	0	0	0
202	DI-18 DO YOU USE OR REFER TO BANDPASS REGION WHEN WORKING WITH RCL CIRCUITS	7	7	7	5
203	DI-19 DO YOU USE OR REFER TO CIRCUIT Q WHEN WORKING WITH RCL CIRCUITS	0	0	0	0

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK	SPC 051	SPC 052	SPC 054
D 204 DI-20 DO YOU USE OR REFER TO TANK CIRCUITS WHEN WORKING WITH RCL CIRCUITS	8	8	7
D 205 DI-21 DO YOU DETERMINE VALUES OF TRIGONOMETRIC FUNCTIONS USING FORMULAS	2	2	2
D 206 DI-22 DO YOU DRAW VOLTAGE, CURRENT, OR IMPEDANCE VECTOR DIAGRAMS FOR CIRCUITS	3	3	3
D 207 DI-23 DO YOU CALCULATE TOTAL IMPEDANCE FOR CAPACITIVE CIRCUITS	5	5	5
D 208 DI-24 DO YOU CALCULATE PHASE ANGLES BETWEEN IMPEDANCE AND RESISTANCE IN CAPACITIVE CIRCUITS	2	2	2
D 209 DI-25 DO YOU CALCULATE TOTAL IMPEDANCE FOR SERIES RCL CIRCUITS	3	3	3
D 210 DI-26 DO YOU CALCULATE IMPEDANCE ANGLES FOR SERIES RCL CIRCUITS	3	3	3
D 211 DI-27 DO YOU CALCULATE APPARENT POWER (PA) FOR SERIES RCL CIRCUITS	3	3	3
D 212 DI-28 DO YOU CALCULATE TRUE POWER (PT) FOR SERIES RCL CIRCUITS	3	3	3
D 213 DI-29 DO YOU CALCULATE POWER FACTORS (PF) FOR SERIES RCL CIRCUITS	5	5	5
D 214 DI-30 DO YOU CALCULATE TOTAL CURRENT FOR PARALLEL RCL CIRCUITS	5	5	5
D 215 DI-31 DO YOU CALCULATE IMPEDANCE ANGLES FOR PARALLEL RCL CIRCUITS	3	3	3
D 216 DI-32 DO YOU CALCULATE TOTAL IMPEDANCE FOR PARALLEL RCL CIRCUITS USING THE ASSUMED VOLTAGE METHOD	3	3	3
D 217 DI-33 DO YOU CALCULATE TOTAL IMPEDANCE FOR PARALLEL RCL CIRCUITS USING OHM'S LAW	8	8	9
D 218 DI-34 DO YOU CHECK CAPACITORS USING OHMMETERS	23	23	22
D 219 DI-35 DO YOU CHECK CAPACITORS USING SUBSTITUTION	11	11	12
D 220 DI-36 DO YOU CHECK INDUCTORS USING OHMMETERS	20	20	19
D 221 DI-37 DO YOU CHECK INDUCTORS USING SUBSTITUTION	10	10	10
D 222 DI-38 DO YOU USE OR REFER TO THE GENERAL RULE THAT THETA = 0, PF = 1, AND PA = PT FOR RESONANT CIRCUITS	3	3	3
D 223 DI-39 DO YOU CALCULATE RESONANT FREQUENCIES FOR RCL CIRCUITS	3	3	3
D 224 DI-40 DO YOU USE OR REFER TO THE GENERAL RULE THAT IMPEDANCE IS MINIMUM AND CURRENT MAXIMUM AT THE RESONANT FREQUENCY FOR SERIES RCL CIRCUITS	8	8	7
D 225 DI-41 DO YOU USE OR REFER TO THE GENERAL RULE THAT LINE CURRENT IS MINIMUM AND IMPEDANCE MAXIMUM AT RESONANT FREQUENCY FOR PARALLEL RCL CIRCUITS	7	7	5
D 226 DI-42 DO YOU USE OR REFER TO THE GENERAL RULE THAT HALF POWER POINTS ARE AT 70.7 PERCENT OF THE PEAK CURRENT VALUE	3	3	3
D 227 DI-43 DO YOU USE OR REFER TO THE GENERAL RULE THAT BANDWIDTH IS INVERSELY PROPORTIONAL TO Q	2	2	2
D 228 DI-44 DO YOU DETERMINE HOW CHANGES IN FREQUENCY, RESISTANCE , CAPACITANCE, OR INDUCTANCE WILL AFFECT CURRENT OR PHASE ANGLES FOR RCL CIRCUITS	7	7	7

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	DY-TSK	SPC 051	SPC 052	SPC 054
229 D2-01	IN YOUR PRESENT JOB, DO YOU WORK WITH, USE, OR REFER TO SERIES OR PARALLEL RESONANT CIRCUITS OR TIME CONSTANTS	8	8	9
230 D2-02	DO YOU WORK WITH, USE, OR REFER TO TIME CONSTANTS	5	5	5
231 D2-03	DO YOU WORK WITH, USE, OR REFER TO AVAILABLE VOLTAGE	5	5	5
232 D2-04	DO YOU WORK WITH, USE, OR REFER TO TRANSIENT INTERVALS	3	3	3
233 D2-05	DO YOU USE OR REFER TO THE GENERAL RULE THAT A CAPACITOR IS FULLY CHARGED (OR DISCHARGED) AFTER FIVE (5) TIME CONSTANTS (TC)	3	3	3
234 D2-06	DO YOU USE OR REFER TO UNIVERSAL TIME CONSTANT CHARTS	0	0	0
235 D2-07	DO YOU USE EQUATIONS OR FORMULAS TO DETERMINE CIRCUIT CURRENT OR COMPONENT VOLTAGES AFTER A SPECIFIC TIME FOR RC OR LR CIRCUITS	2	2	2
236 D2-08	DO YOU USE EQUATIONS OR FORMULAS TO DETERMINE THE TIME REQUIRED FOR CIRCUIT CURRENT OR COMPONENT VOLTAGES TO REACH SPECIFIC VALUES FOR RC OR LR CIRCUITS	2	2	2
237 D2-09	DO YOU USE EQUATIONS OR FORMULAS TO DETERMINE COMPONENT VALUES REQUIRED FOR CIRCUIT CURRENT AND COMPONENT VOLTAGES TO REACH SPECIFIC VALUES IN SPECIFIC TIMES	2	2	2
238 D2-10	DO YOU USE OR REFER TO THE GENERAL RULE THAT CURRENT IN LR CIRCUITS REACHES ITS MINIMUM VALUE (OR ZERO) AFTER FIVE (5) TIME CONSTANTS	2	2	2
239 D3-01	DO YOU WORK WITH CIRCUITS USED AS FILTERS IN YOUR PRESENT JOB	48	48	48
240 D3-02	DO YOU INSPECT FILTER CIRCUITS	39	39	40
241 D3-03	DO YOU CLEAN FILTER CIRCUITS	23	23	24
242 D3-04	DO YOU ALIGN OR ADJUST FILTER CIRCUITS	20	20	19
243 D3-05	DO YOU TROUBLESHOOT TO THE FILTER CIRCUIT LEVEL	36	36	36
244 D3-06	DO YOU REMOVE OR REPLACE THE COMPLETE FILTER CIRCUIT	28	28	28
245 D3-07	DO YOU REMOVE OR REPLACE FILTER CIRCUIT COMPONENT PARTS	41	41	43
246 D3-08	DO YOU REMOVE OR REPLACE FILTER CIRCUIT COMPONENT	20	20	21
247 D3-09	DO YOU WORK WITH LOW PASS FILTERS	39	39	40
248 D3-10	DO YOU WORK WITH HIGH PASS FILTERS	36	36	36
249 D3-11	DO YOU WORK WITH BANDPASS FILTERS	25	25	24
250 D3-12	DO YOU WORK WITH BAND-REJECT FILTERS	20	20	19
251 D3-13	DONT REMEMBER WHICH TYPE OF FILTER YOU WORK WITH	13	13	14
252 D3-14	DO YOU WORK WITH L-SECTION FILTER CONFIGURATION	10	10	10
253 D3-15	DO YOU WORK WITH T-SECTION FILTER CONFIGURATION	5	5	5
254 D3-16	DO YOU WORK WITH PI-SECTION FILTER CONFIGURATION	5	5	5
255 D3-17	DONT REMEMBER WHICH TYPE FILTER CONFIGURATION	31	31	33
256 D3-18	DO THE FILTERS YOU WORK WITH USE PARALLEL RESONANT CIRCUITS	16	16	17
257 D3-19	DO THE FILTERS YOU WORK WITH USE SERIES-PARALLEL CIRCUITS	20	20	21
258 D3-20	DO THE FILTERS YOU WORK WITH USE SERIES RESONANT CIRCUITS	15	15	16

SERIES AND PARALLEL RESONANCE (TIME CONSTANTS)

FILTERS

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK		SPC 051	SPC 052	SPC 054
D 259 D3-21	DON'T REMEMBER WHICH TYPE OF BASIC CIRCUIT	25	25	26
D 260 D3-22	DO YOU USE EQUATIONS OR FORMULAS TO DETERMINE CAPACITANCE OR INDUCTANCE VALUES REQUIRED FOR SPECIFIC FILTERS	5	5	5
E 261 E1-01	DO YOU WORK WITH COUPLING DEVICES IN YOUR PRESENT JOB	10	10	9
E 262 E1-02	DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH RC COUPLING	11	11	10
E 263 E1-03	DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH IMPEDANCE COUPLING	11	11	10
E 264 E1-04	DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH TRANSFORMER COUPLING	11	11	10
E 265 E1-05	DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM RC COUPLING	13	13	12
E 266 E1-06	DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM IMPEDANCE COUPLING	13	13	12
E 267 E1-07	DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM TRANSFORMER COUPLING	11	11	10
E 268 E1-08	DO YOU WORK WITH DIRECTLY COUPLED CIRCUITS	11	11	10
E 269 E1-09	DO YOU WORK WITH CAPACITIVE-RESISTIVE COUPLED CIRCUITS	11	11	10
E 270 E1-10	DO YOU WORK WITH CAPACITIVE-INDUCTIVE COUPLED CIRCUITS	11	11	10
E 271 E1-11	DO YOU WORK WITH TRANSFORMER COUPLED CIRCUITS	8	8	7
E 272 E1-12	DON'T REMEMBER WHICH TYPE OF COUPLING CIRCUITS	0	0	0
E 273 E2-01	IN YOUR PRESENT JOB, DO YOU PERFORM SOLDERING TECHNIQUES OR INSPECT OR EVALUATE SOLDERED CONNECTIONS	89	89	90
E 274 E2-02	DO YOU SELECT TYPE OF SOLDER TO USE	75	75	74
E 275 E2-03	DO YOU ADD FLUX TO CONNECTIONS	61	61	59
E 276 E2-04	DO YOU CLEAN CONNECTIONS USING SOLVENTS	56	56	55
E 277 E2-05	DO YOU STRIP INSULATION FROM WIRES	92	92	91
E 278 E2-06	DO YOU CONNECT OR DISCONNECT HEAT SINKS	79	79	78
E 279 E2-07	DO YOU BEND OR SHAPE WIRES OR LEADS	90	90	90
E 280 E2-08	DO YOU CUT WIRES	92	92	91
E 281 E2-09	DO YOU FILE OR SHAPE SOLDERING IRON TIPS	87	87	86
E 282 E2-10	DO YOU TIN SOLDERING IRON TIPS	90	90	90
E 283 E2-11	DO YOU CLEAN SOLDERING IRON TIPS	92	92	91
E 284 E2-12	DO YOU CLEAN ELECTRICAL SURFACES USING ERASERS	74	74	72
E 285 E2-13	DO YOU TIN OR PRE-TIN CONDUCTORS	80	80	79
E 286 E2-14	DO YOU INSPECT SOLDERED CONNECTIONS	90	90	90
E 287 E2-15	DO YOU DESOLDER CONNECTIONS BY WICKING	56	56	53
E 288 E2-16	DO YOU DESOLDER CONNECTIONS USING VACUUM DESOLDERING	74	74	72
TOOLS				
E 289 E2-17	DO YOU CUT COMPONENT LEADS TO REMOVE COMPONENTS	75	75	76
E 290 E2-18	DO YOU CRUSH COMPONENTS FOR REMOVAL	33	33	33

COUPLING

SOLDERING

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK		SPC 051	SPC 052	SPC 054
E 291 E2-19	DO YOU MAKE HARDWIRE CONNECTIONS	85	85	84
E 292 E2-20	DO YOU MAKE PRINTED CIRCUIT BOARD CONNECTIONS	56	56	57
E 293 E2-21	DO YOU SOLDER PASSIVE COMPONENTS SUCH AS RESISTORS OR CAPACITORS ON PRINTED CIRCUIT BOARDS	56	56	57
E 294 E2-22	DO YOU SOLDER ACTIVE COMPONENTS SUCH AS SOLID-STATE DIODES OR TRANSISTORS ON PRINTED CIRCUIT BOARDS	49	49	50
E 295 E3-01	DO YOU WORK WITH RELAYS ON YOUR PRESENT JOB	82	82	84
E 296 E3-02	DO YOU ADJUST RELAYS	69	69	69
E 297 E3-03	DO YOU CLEAN RELAYS	80	80	81
E 298 E3-04	DO YOU INSPECT RELAYS	84	84	84
E 299 E3-05	DO YOU REMOVE OR REPLACE COMPLETE RELAYS	84	84	83
E 300 E3-06	DO YOU REMOVE OR REPLACE PARTS OR RELAYS	56	56	55
E 301 E3-07	DO YOU TROUBLESHOOT RELAYS	82	82	81
E 302 E3-08	DO YOU STRAIGHTEN RELAY CONTACTS	72	72	72
E 303 E3-09	DO YOU PERFORM TASKS ON RELAY CONTACTS	77	77	78
E 304 E3-10	DO YOU PERFORM TASKS ON RELAY CORES	33	33	31
E 305 E3-11	DO YOU PERFORM TASKS ON RELAY COILS	30	30	28
E 306 E3-12	DO YOU PERFORM TASKS ON RELAY ARMATURES	54	54	53
E 307 E3-13	DO YOU PERFORM TASKS ON RELAY SPRINGS	56	56	55
E 308 E3-14	DO YOU USE OR REFER TO SINGLE POLE, SINGLE THROW (SPST), NORMALLY OPER (NO) SCHEMATIC SYMBOLS FOR RELAYS	56	56	57
E 309 E3-15	DO YOU USE OR REFER TO SINGLE POLE, SINGLE THROW (SPST), NORMALLY CLOSED (NC) SCHEMATIC SYMBOLS FOR RELAYS	56	56	57
E 310 E3-16	DO YOU USE OR REFER TO SINGLE POLE, DOUBLE THROW (SPDT) SCHEMATIC SYMBOLS FOR RELAYS	48	48	48
E 311 E3-17	DO YOU USE OR REFER TO DOUBLE POLE, DOUBLE THROW (DPDT) SCHEMATIC SYMBOLS FOR RELAYS	46	46	47
E 312 E3-18	DO YOU USE OR REFER TO OTHER RELAY SYMBOLS SCHEMATIC SYMBOLS FOR RELAYS	66	66	66
E 313 E3-19	DO YOU CHECK ELECTRICAL CONTINUITY OF COILS BY MEASURING RESISTANCE	56	56	55
F 314 F1-01	IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS DEALING WITH MICROPHONES	67	67	67
F 315 F1-02	DO YOU INSPECT MICROPHONES	74	74	74
F 316 F1-03	DO YOU CLEAN MICROPHONES	52	52	55
F 317 F1-04	DO YOU OPERATE MICROPHONES	62	62	62
F 318 F1-05	DO YOU TROUBLESHOOT AS FAR AS CHECKING WIRE CONNECTIONS BUT DO NOT TROUBLESHOOT DOWN TO COMPONENT PARTS OR MICROPHONES	70	70	71
F 319 F1-06	DO YOU TROUBLESHOOT DOWN TO MICROPHONE PARTS	18	18	19
F 320 F1-07	DO YOU REMOVE OR REPLACE COMPLETE MICROPHONES	72	72	74
F 321 F1-08	DO YOU REMOVE OR REPLACE MICROPHONE PARTS	15	15	16
F 322 F1-09	DO YOU PERFORM TASKS ON CARBON MICROPHONES	46	46	45
F 323 F1-10	DO YOU PERFORM TASKS ON CAPACITOR MICROPHONES	11	11	12
F 324 F1-11	DO YOU PERFORM TASKS ON CRYSTAL MICROPHONES	10	10	10
F 325 F1-12	DO YOU PERFORM TASKS ON DYNAMIC MICROPHONES	44	44	45
F 326 F1-13	DO YOU PERFORM TASKS ON VELOCITY RIBBON MICROPHONES	3	3	3

RELAYS

MICROPHONES

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK		SPC 051	SPC 052	SPC 054
F 327 F2-01	IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS DEALING WITH SPEAKERS — SPEAKERS	61	61	60
F 328 F2-02	DO YOU INSPECT SPEAKERS	62	62	62
F 329 F2-03	DO YOU CLEAN SPEAKERS	52	52	53
F 330 F2-04	DO YOU OPERATE SPEAKERS	57	57	57
F 331 F2-05	DO YOU TROUBLESHOOT AS FAR AS CHECKING WIRE CONNECTIONS BUT DO NOT TROUBLESHOOT DOWN TO COMPONENT PARTS OF SPEAKERS	59	59	59
F 332 F2-06	DO YOU TROUBLESHOOT DOWN TO SPEAKER PARTS	23	23	24
F 333 F2-07	DO YOU REMOVE OR REPLACE COMPLETE SPEAKERS	62	62	64
F 334 F2-08	DO YOU REMOVE OR REPLACE SPEAKER PARTS	16	16	17
F 335 F2-09	DO YOU PERFORM ANY TASKS ON SPEAKER CONES	10	10	10
F 336 F2-10	DO YOU PERFORM ANY TASKS ON SPEAKER SPIDERS	5	5	5
F 337 F2-11	DO YOU PERFORM ANY TASKS ON SPEAKER FIELD COILS	10	10	10
F 338 F2-12	DO YOU PERFORM ANY TASKS ON SPEAKER VOICE COILS	8	8	9
F 339 F2-13	DO YOU PERFORM ANY TASKS ON SPEAKER PERMANENT MAGNETS	8	8	9
F 340 F2-14	DO YOU PERFORM ANY TASKS ON SPEAKER ELECTROMAGNETS	8	8	9
F 341 F2-15	DO YOU PERFORM ANY TASKS ON SPEAKER SOFT IRON CORES	5	5	5
F 342 F3-01	DO YOU USE OSCILLOSCOPES IN YOUR PRESENT JOB	84	84	86
F 343 F3-02	DO YOU USE OSCILLOSCOPES TO PERFORM OPERATIONAL CHECKS	84	84	84
F 344 F3-03	DO YOU USE OSCILLOSCOPES TO PERFORM ALIGNMENTS OR ADJUSTMENTS	74	74	76
F 345 F3-04	DO YOU USE OSCILLOSCOPES TO TROUBLESHOOT ELECTRONIC CIRCUITS — OSCILLOSCOPES	84	84	84
F 346 F3-05	DO YOU USE OSCILLOSCOPES TO MEASURE FREQUENCY	69	69	71
F 347 F3-06	DO YOU USE OSCILLOSCOPES TO MEASURE TIME	48	48	50
F 348 F3-07	DO YOU USE OSCILLOSCOPES TO OBSERVE LISAJOUS PATTERNS	15	15	16
F 349 F3-08	DO YOU USE OSCILLOSCOPES TO OBSERVE SIGNALS WHILE UTILIZING ATTENUATOR PROBES	43	43	45
F 350 F3-09	DO YOU USE OSCILLOSCOPES TO MAKE FREQUENCY OR TIME MEASUREMENTS USING DELAY TIME MULTIPLIERS	26	26	28
F 351 F3-10	DO YOU USE OSCILLOSCOPES TO MEASURE AC VOLTAGE	70	70	71
F 352 F3-11	DO YOU USE OSCILLOSCOPES TO MEASURE OR OBSERVE SIGNALS AFTER FIRST ADJUSTING THE GAIN AND DC BAL CONTROLS	49	49	50
F 353 F3-12	DO YOU USE OSCILLOSCOPES TO MEASURE DC VOLTAGE	79	79	79
G 354 G1-01	DO YOU WORK WITH SEMICONDUCTOR DIODES IN YOUR PRESENT JOB	62	62	62
G 355 G1-02	DO YOU INSPECT DIODES	64	64	64
G 356 G1-03	DO YOU REMOVE OR REPLACE DIODES	61	61	62
G 357 G1-04	DO YOU CHECK DIODES USING AN INSTRUMENT	59	59	59
G 358 G1-05	DO YOU USE ENERGY LEVEL DIAGRAMS IN YOUR WORK WITH DIODES	2	2	2
G 359 G1-06	DO YOU USE PN JUNCTION DIODE CHARACTERISTIC CURVES, TOGETHER WITH VALUES OF FORWARD AND REVERSE BIAS VOLTAGE, TO COMPUTE FORWARD OR REVERSE LIAS RESISTANCE	10	10	9
G 360 G1-07	DO YOU COMPUTE FORWARD OR REVERSE BIAS RESISTANCE FOR DIODES — SEMICONDUCTOR DIODES	13	13	10

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK	SPC 051	SPC 052	SPC 054
361 GI-08 DO YOU USE OR REFER TO THE GENERAL RULE THAT TEMPERATURE CAN AFFECT THE OPERATION OF DIODES	39	39	38
362 GI-09 DO YOU IDENTIFY SEMICONDUCTOR DIODES AS OPPOSED TO OTHER ELECTRONIC COMPONENTS, SUCH AS RESISTORS, BASED ON THEIR PHYSICAL APPEARANCE	46	46	45
363 GI-10 DO YOU REFER TO OR DO YOU DETERMINE THE GENERAL EFFECTS OF DOPING ON CURRENT FLOW	8	8	5
364 GI-11 DO YOU USE OR REFER TO MEASUREMENTS OF FORWARD BIAS RESISTANCE	21	21	21
365 GI-12 DO YOU USE OR REFER TO DIODE COLOR CODING	18	18	19
366 GI-13 DO YOU USE OR REFER TO CENTRIFUGAL FORCE OF AN ELECTRON IN ORBIT AROUND A NUCLEUS	0	0	0
367 GI-14 DO YOU USE OR REFER TO CENTRIPETAL FORCE OF AN ELECTRON IN ORBIT AROUND A NUCLEUS	0	0	0
368 GI-15 DO YOU USE OR REFER TO DIODE NUMBERING SYSTEM, SUCH AS IN 538	25	25	24
369 GI-16 DO YOU USE OR REFER TO KINETIC ENERGY OF AN ELECTRON MOVING IN ORBIT	2	2	2
370 GI-17 DO YOU USE OR REFER TO POTENTIAL ENERGY OF AN ELECTRON MOVING IN ORBIT	0	0	0
371 GI-18 DO YOU USE OR REFER TO MEASUREMENTS OF REVERSE BIAS RESISTANCE	21	21	21
372 GI-19 DO YOU USE OR REFER TO NUMBER OF ELECTRONS IN A PARTICULAR SHELL OR ORBIT	2	2	2
373 GI-20 DO YOU USE OR REFER TO PERMISSIBLE ENERGY LEVELS OF AN ORBITING ELECTRON	2	2	2
374 GI-21 DO YOU USE OR REFER TO FORBIDDEN ENERGY LEVELS OF AN ORBITING ELECTRON	2	2	2
375 GI-22 DO YOU USE OR REFER TO VALENCE ELECTRONS (THOSE IN THE OUTERMOST SHELL)	2	2	2
376 GI-23 DO YOU USE OR REFER TO ATOMIC NUMBER (TOTAL NUMBER OF ELECTRONS IN ATOM)	2	2	2
377 GI-24 DO YOU USE OR REFER TO SYMBOLS ON THE DIODE WHICH INDICATE THE CATHODE END	43	43	41
378 GI-25 DO YOU NEED TO KNOW WHICH MATERIALS ARE USED IN THE CONSTRUCTION OF DIODES SUCH AS GERMANIUM OR SILICON	11	11	12
379 GI-26 DO YOU NEED TO KNOW THAT SEMICONDUCTORS HAVE NEGATIVE TEMPERATURE COEFFICIENTS OF RESISTANCE (AS TEMPERATURE INCREASES RESISTANCE DECREASES)	11	11	10
380 GI-27 DO YOU USE OR REFER TO PN JUNCTION DIODE CHARACTERISTIC CURVES, SUCH AS VOLTAGE - CURRENT CHARACTERISTIC CURVES (PERHAPS YOU DO THIS TO IDENTIFY POINTS OF STRUCTURAL BREAKDOWN OR OPERATING REGIONS)	8	8	7
381 GI-28 DO YOU DETERMINE WHETHER PN JUNCTION DIODES ARE FORWARD BIASED OR REVERSE BIASED WHEN YOU READ OR INTERPRET CIRCUIT DIAGRAMS	28	28	26
382 GI-29 DO YOU USE OR REFER TO VALENCE BAND IN SEMICONDUCTOR MATERIALS	0	0	0

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK	SPC 051	SPC 052	SPC 054
383 G1-30 DO YOU USE OR REFER TO FORBIDDEN BAND IN SEMICONDUCTOR MATERIALS	2	2	2
384 G1-31 DO YOU USE OR REFER TO CONDUCTION BAND IN SEMICONDUCTOR MATERIALS	2	2	2
385 G1-32 DO YOU USE OR REFER TO COVALENT BONDING IN SEMICONDUCTOR MATERIALS	2	2	2
386 G1-33 DO YOU USE OR REFER TO ELECTRON-HOLE PAIR CREATED IN SEMICONDUCTORS	0	0	0
387 G1-34 DO YOU USE OR REFER TO ELECTRON FLOW OR HOLE FLOW IN SEMICONDUCTORS	5	5	5
388 G1-35 DO YOU USE OR REFER TO DONOR IMPURITY IN SEMICONDUCTORS	0	0	0
389 G1-36 DO YOU USE OR REFER TO ACCEPTOR IMPURITY IN SEMICONDUCTORS	0	0	0
390 G1-37 DO YOU USE OR REFER TO P-TYPE SEMICONDUCTOR MATERIAL	18	18	17
391 G1-38 DO YOU USE OR REFER TO N-TYPE SEMICONDUCTOR MATERIAL	18	18	17
392 G1-39 DO YOU USE OR REFER TO MAJORITY CARRIERS IN SEMICONDUCTORS	7	7	7
393 G1-40 DO YOU USE OR REFER TO MINORITY CARRIERS IN SEMICONDUCTORS	5	5	5
394 G1-41 DO YOU USE OR REFER TO JUNCTION RECOMBINATION IN SEMICONDUCTORS	2	2	2
395 G1-42 DO YOU USE OR REFER TO DEPLETION REGION IN SEMICONDUCTORS	2	2	2
396 G1-43 DO YOU USE OR REFER TO RELATIONSHIP BETWEEN BARRIER WIDTH AND DIFFERENCE OF POTENTIAL	3	3	3
397 G1-44 DO YOU USE OR REFER TO THE 10:1 BACK TO FRONT RESISTANCE RATIO FOR DIODES	0	0	0
398 G1-45 DO YOU USE OR REFER TO BARRIER HEIGHT IN SEMICONDUCTORS	0	0	0
399 G1-46 DO YOU USE OR REFER TO DIODE SUBSTITUTION INFORMATION	23	23	24
400 G1-47 DO YOU USE OR REFER TO MAXIMUM AVERAGE FORWARD CURRENT DIODE RATINGS	8	8	9
401 G1-48 DO YOU USE OR REFER TO PEAK RECURRENT FORWARD CURRENT DIODE RATINGS	7	7	7
402 G1-49 DO YOU USE OR REFER TO MAXIMUM SURGE CURRENT DIODE RATINGS	7	7	7
403 G1-50 DO YOU USE OR REFER TO PEAK REVERSE (INVERSE) VOLTAGE DIODE RATINGS	5	5	5
404 G2-01 DO YOU WORK WITH TRANSISTORS IN YOUR PRESENT JOB.	74	74	74
405 G2-02 DO YOU INSPECT TRANSISTORS	74	74	74
406 G2-03 DO YOU REMOVE OR REPLACE TRANSISTORS	70	70	72
407 G2-04 DO YOU CHECK TRANSISTORS USING AN INSTRUMENT	62	62	62
408 G2-05 DO YOU USE OR REFER TO EMITTER - BASE (EB) FORWARD AND REVERSE RESISTANCE MEASUREMENTS	36	36	36
409 G2-06 DO YOU USE OR REFER TO COLLECTOR - BASE (CB) FORWARD AND REVERSE RESISTANCE MEASUREMENTS	36	36	36

TRANSISTORS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK

		SPC 051	SPC 052	SPC 054
410	G2-07 DO YOU USE OR REFER TO EMITTER - COLLECTOR (EC) RESISTANCE MEASUREMENTS	34	34	34
411	G2-08 DO YOU USE OR REFER TO HOW BIASING AFFECTS THE PHYSICAL BARRIER WIDTH OF THE EMITTER - BASE JUNCTION	13	13	12
412	G2-09 DO YOU USE OR REFER TO HOW BIASING AFFECTS THE PHYSICAL BARRIER WIDTH OF THE COLLECTOR - BASE JUNCTION	13	13	12
413	G2-10 DO YOU USE OR REFER TO THE PHYSICAL SIZE OF THE TRANSISTOR STRUCTURE (COLLECTOR, BASE AND EMITTER)	36	36	36
414	G2-11 DO YOU USE OR REFER TO LEAKAGE CURRENT (ICBO) IN A TRANSISTOR	8	8	9
415	G2-12 DO YOU USE OR REFER TO TRANSISTOR SCHEMATIC SYMBOLS	66	66	66
416	G2-13 DO YOU USE OR REFER TO TRANSISTOR NOTATION SUCH AS Q1, Q2, ETC	62	62	62
417	G2-14 DO YOU USE OR REFER TO TRANSISTOR SUBSTITUTION INFORMATION	39	39	40
418	G2-15 DO YOU USE OR REFER TO THE GENERAL RULE THAT THE TRANSISTOR BASE CURRENT IB IS NORMALLY SIGNIFICANTLY SMALLER THAN THE EMITTER CURRENT IE (USUALLY IB BEING 2 TO 8 PERCENT OF IE)	13	13	14
419	G2-16 DO YOU USE THE INFORMATION THAT THE EFFECT OF EMITTER BASE VOLTAGE ON BASE CURRENT IS THE CONTROLLING FACTOR FOR TRANSISTORS	34	34	33
420	G2-17 DO YOU USE THE GENERAL RULE THAT LEAKAGE CURRENT (ICBO) IN A TRANSISTOR INCREASES AS TEMPERATURE INCREASES	8	8	9
421	G2-18 DO YOU USE OR REFER TO TRANSISTOR CHARACTERISTIC CURVES	5	5	3
422	G2-19 DO YOU USE OR REFER TO BETA TRANSISTOR GAINS	8	8	9
423	G2-20 DO YOU USE OR REFER TO ALPHA TRANSISTOR GAINS	8	8	9
424	G2-21 DO YOU USE OR REFER TO GAMMA TRANSISTOR GAINS	8	8	9
425	G2-22 DO YOU CALCULATE BETA TRANSISTOR GAINS	3	3	3
426	G2-23 DO YOU CALCULATE ALPHA TRANSISTOR GAINS	3	3	3
427	G2-24 DO YOU CALCULATE GAMMA TRANSISTOR GAINS	3	3	3
428	G3-01 DO YOU WORK WITH TRANSISTOR AMPLIFIERS IN YOUR PRESENT JOB	43	43	43
429	G3-02 DO YOU INSPECT TRANSISTOR AMPLIFIERS	46	46	47
430	G3-03 DO YOU ALIGN OR ADJUST TRANSISTOR AMPLIFIERS	41	41	41
431	G3-04 DO YOU TROUBLESHOOT TO THE AMPLIFIER CIRCUIT LEVEL	41	41	41
432	G3-05 DO YOU TROUBLESHOOT TO AMPLIFIER COMPONENTS	30	30	29
433	G3-06 DO YOU REMOVE OR REPLACE THE COMPLETE AMPLIFIER	43	43	45
434	G3-07 DO YOU REMOVE OR REPLACE AMPLIFIER COMPONENTS	28	28	29
435	G3-08 DO YOU USE OR REFER TO (COMMON EMITTER) THE CHANGE IN COLLECTOR CURRENT WHICH RESULTS FROM A CHANGE IN BASE CURRENT	11	11	12
436	G3-09 DO YOU USE OR REFER TO (COMMON EMITTER) THE CALCULATIONS NECESSARY TO MEASURE THE SPECIFIC CHANGE IN COLLECTOR CURRENT WHICH RESULTS FROM A SPECIFIC CHANGE IN BASE CURRENT	7	7	7

TRANSISTOR AMPLIFIERS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK

		SPC 051	SPC 052	SPC 054
G 437	G3-10 DO YOU USE OR REFER TO (COMMON EMITTER) THE CHANGE IN COLLECTOR VOLTAGE WHICH RESULTS FROM A CHANGE IN BASE CURRENT	13	13	14
G 438	G3-11 DO YOU USE OR REFER TO (COMMON EMITTER), THE CALCULATIONS NECESSARY TO MEASURE THE SPECIFIC CHANGE IN COLLECTOR VOLTAGE WHICH RESULTS FROM A SPECIFIC CHANGE IN BASE CURRENT	5	5	5
G 439	G3-12 DO YOU USE OR REFER TO (COMMON EMITTER) THE CHANGE IN BASE CURRENT WHICH RESULTS FROM AN INPUT SIGNAL	11	11	12
G 440	G3-13 DO YOU USE OR REFER TO (COMMON EMITTER) THE CALCULATIONS NECESSARY TO MEASURE THE SPECIFIC CHANGE IN BASE CURRENT WHICH RESULTS FROM A SPECIFIC INPUT SIGNAL	5	5	5
G 441	G3-14 DO YOU USE THE LOAD-LINE METHOD OF ANALYSIS IN YOUR CIRCUIT ANALYSIS (THIS METHOD REQUIRES YOU TO PLOT A LOAD-LINE ON A TRANSISTOR CHARACTERISTIC CURVE)	5	5	5
G 442	G3-15 DO YOU USE OR REFER TO THE OPERATING POINT Q (QUIESCENT POINT) FOR A TRANSISTOR	7	7	7
G 443	G3-16 DO YOU CALCULATE THE SPECIFIC QUIESCENT POINT FOR A PARTICULAR TRANSISTOR	3	3	3
G 444	G3-17 DO YOU MEASURE VOLTAGE GAIN USED IN THE COMMON EMITTER CONFIGURATION	28	28	29
G 445	G3-18 DO YOU MEASURE CURRENT GAIN USED IN THE COMMON EMITTER CONFIGURATION	11	11	12
G 446	G3-19 DO YOU MEASURE POWER GAIN USED IN THE COMMON EMITTER CONFIGURATION	15	15	16
G 447	G3-20 DO YOU CALCULATE THE VOLTAGE GAIN FOR SPECIFIC TRANSISTORS USING A FORMULA THAT IS, DO YOU DIVIDE THE CHANGE IN BASE-EMITTER VOLTAGE INTO THE CHANGE THE BASE COLLECTOR VOLTAGE TO DETERMINE THE VOLTAGE GAIN	5	5	5
G 448	G3-21 DO YOU CALCULATE THE CURRENT GAIN FOR SPECIFIC TRANSISTORS USING A FORMULA THAT IS, DO YOU DIVIDE THE CHANGE IN BASE CURRENT INTO THE CHANGE IN COLLECTOR CURRENT TO DETERMINE THE CURRENT GAIN	3	3	3
G 449	G3-22 DO YOU CALCULATE THE POWER GAIN FOR A SPECIFIC TRANSISTOR USING A FORMULA THAT IS, DO YOU MULTIPLY THE CURRENT GAIN TIMES THE VOLTAGE GAIN TO DETERMINE THE POWER GAIN	5	5	5
G 450	G3-23 DO YOU NEED TO KNOW THAT MORE COLLECTOR CURRENT IS GENERATED WITH LESS COLLECTOR VOLTAGE AS TEMPERATURE INCREASES (THIS AFFECTS THE STATIC OPERATING POINT [Q] OF THE TRANSISTOR)	2	2	2
G 451	G3-24 DO YOU COMPUTE THE STATIC OPERATING POINT [Q] OF A TRANSISTOR AT DIFFERENT TEMPERATURES	2	2	2
G 452	G3-25 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH EMITTER (SWAMPING) RESISTOR STABILIZATION	11	11	10
G 453	G3-26 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH SELF-BIAS STABILIZATION	7	7	5

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK	SPC 051	SPC 052	SPC 054
454 G3-27 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH THERMISTOR STABILIZATION	8	8	7
455 G3-28 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH FORWARD BIAS DIODE STABILIZATION	8	8	7
456 G3-29 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH REVERSE BIAS DIODE STABILIZATION	8	8	7
457 G3-30 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH DOUBLE DIODE STABILIZATION	8	8	7
458 G3-31 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM EMITTER (SWAMPING) RESISTOR STABILIZATION	10	10	9
459 G3-32 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM SELF-BIAS STABILIZATION	8	8	7
460 G3-33 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM THERMISTOR STABILIZATION	10	10	9
461 G3-34 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM FORWARD BIAS DIODE STABILIZATION	8	8	7
462 G3-35 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM REVERSE BIAS DIODE STABILIZATION	8	8	7
463 G3-36 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM DOUBLE DIODE STABILIZATION	8	8	7
464 G3-37 DO YOU IDENTIFY AMPLITUDE DISTORTION FOR TRANSISTOR CIRCUITS	33	33	33
465 G3-38 DO YOU TROUBLESHOOT TRANSISTOR CIRCUITS TO FIND THE CAUSES OF AMPLITUDE DISTORTION	30	30	29
466 G3-39 DO YOU IDENTIFY FREQUENCY DISTORTION FOR TRANSISTOR CIRCUITS	26	26	26
467 G3-40 DO YOU IDENTIFY PHASE DISTORTION FOR TRANSISTOR CIRCUITS	13	13	12
468 G3-41 DO YOU TROUBLESHOOT TRANSISTOR CIRCUITS TO FIND THE CAUSES OF PHASE DISTORTION	10	10	9
469 G3-42 DO YOU TROUBLESHOOT TRANSISTOR CIRCUITS TO FIND THE CAUSES OF FREQUENCY DISTORTION	20	20	19
470 G3-43 DO YOU NEED TO KNOW THE DEGENERATIVE EFFECTS ON THE CIRCUIT CAUSED BY CHANGING EMITTER RESISTANCE FOR TRANSISTOR AMPLIFIERS IN THE COMMON COLLECTOR CONFIGURATION	7	7	7
471 G3-44 DO YOU DETERMINE THE CLASS OF OPERATION FOR AMPLIFIERS IN ORDER TO TROUBLESHOOT AMPLIFIER CIRCUITS	16	16	17
472 G3-45 DO YOU TROUBLESHOOT OR REPAIR PARAPHASE AMPLIFIERS	5	5	5
473 G3-46 DO YOU TROUBLESHOOT OR REPAIR PUSH-PULL AMPLIFIERS	23	23	22
474 G3-47 DO YOU TROUBLESHOOT OR REPAIR COMPLEMENTARY SYMMETRY CIRCUITS	7	7	7
475 G3-48 DO YOU TROUBLESHOOT OR REPAIR COMPOUND-CONNECTED AMPLIFIERS	11	11	12

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

Dy-TSK	SPC 051	SPC 052	SPC 054	
G 476 G3-49 DO YOU TROUBLESHOOT OR REPAIR CASCADE-CONNECTED AMPLIFIERS				
H 477 H1-01 DO YOU USE OR REFER TO VARACTORS	5	5	5	SOLID-STATE SPECIAL PURPOSE DEVICES
H 478 H1-02 DO YOU USE OR REFER TO TUNNEL DIODES	2	2	2	
H 479 H1-03 DO YOU USE OR REFER TO FIELD EFFECT TRANSISTORS (FET)	8	8	7	
H 480 H1-04 DO YOU USE OR REFER TO UNIJUNCTION TRANSISTORS	7	7	5	
H 481 H1-05 DO YOU USE OR REFER TO ZENER DIODES	49	49	48	
H 482 H1-06 DO YOU USE OR REFER TO INTEGRATED CIRCUITS	39	39	38	
H 483 H2-01 IN YOUR PRESENT JOB, DO YOU WORK WITH POWER SUPPLIES	75	75	74	
H 484 H2-02 DO YOU INSPECT POWER SUPPLIES	74	74	72	
H 485 H2-03 DO YOU CLEAN POWER SUPPLIES	64	64	64	POWER SUPPLIES
H 486 H2-04 DO YOU ALIGN OR ADJUST POWER SUPPLIES	64	64	62	
H 487 H2-05 DO YOU TROUBLESHOOT TO POWER SUPPLY CIRCUIT LEVEL	61	61	59	
H 488 H2-06 DO YOU TROUBLESHOOT TO POWER SUPPLY COMPONENTS	51	51	48	
H 489 H2-07 DO YOU REMOVE OR REPLACE COMPLETE POWER SUPPLIES	70	70	71	
H 490 H2-08 DO YOU REMOVE OR REPLACE POWER SUPPLY COMPONENTS	49	49	50	
H 491 H2-09 DO YOU WORK WITH HALF-WAVE RECTIFIERS	34	34	34	
H 492 H2-10 DO YOU WORK WITH FULL-WAVE RECTIFIERS OTHER THAN BRIDGE RECTIFIERS	44	44	45	
H 493 H2-11 DO YOU WORK WITH BRIDGE RECTIFIERS	36	36	36	
H 494 H2-12 DO YOU WORK WITH THREE-PHASE RECTIFIERS	11	11	12	
H 495 H2-13 DO YOU USE OR REFER TO INPUT VOLTAGE	59	59	60	
H 496 H2-14 DO YOU USE OR REFER TO INPUT FREQUENCY	38	38	38	
H 497 H2-15 DO YOU USE OR REFER TO PEAK OUTPUT VOLTAGE	46	46	47	
H 498 H2-16 DO YOU USE OR REFER TO AVERAGE OUTPUT VOLTAGE	41	41	43	
H 499 H2-17 DO YOU USE OR REFER TO RIPPLE AMPLITUDE	28	28	29	
H 500 H2-18 DO YOU USE OR REFER TO RIPPLE FREQUENCY	23	23	24	
H 501 H2-19 DO YOU USE OR REFER TO PEAK REVERSE (INVERSE) VOLTAGE	18	18	19	
H 502 H2-20 DO YOU USE OR REFER TO SHAPE OF OUTPUT WAVEFORMS	34	34	34	
H 503 H2-21 DO YOU USE OR REFER TO EFFECTIVE OUTPUT VOLTAGE	44	44	47	
H 504 H2-22 DO YOU WORK WITH CIRCUITS WHICH EMPLOY CAPACITIVE FILTERS	33	33	34	
H 505 H2-23 DO YOU WORK WITH CIRCUITS WHICH EMPLOY INDUCTIVE FILTERS	26	26	28	
H 506 H2-24 DO YOU WORK WITH CIRCUITS WHICH EMPLOY CAPACITIVE INPUT L-TYPE FILTERS	21	21	22	
H 507 H2-25 DO YOU WORK WITH CIRCUITS WHICH EMPLOY INDUCTIVE INPUT L-TYPE FILTERS	18	18	19	
H 508 H2-26 DO YOU WORK WITH CIRCUITS WHICH EMPLOY LC PI-TYPE FILTERS	10	10	10	
H 509 H2-27 DO YOU WORK WITH CIRCUITS WHICH EMPLOY RC PI-TYPE FILTERS	13	13	14	
H 510 H2-28 DO YOU WORK WITH CIRCUITS WHICH EMPLOY DON'T REMEMBER WHICH TYPE OF FILTER	41	41	41	
H 511 H2-29 DO YOU HAVE THE OPTION OF REPLACING ONE TYPE OF FILTER WITH A DIFFERENT TYPE OF FILTER	2	2	2	
H 512 H3-01 DO YOU WORK WITH OSCILLATORS IN YOUR PRESENT JOB	61	61	60	OSCILLATORS

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

MULTIVIBRATORS

DY-TSK			SPC 051	SPC 052	SPC 054
H	513	H3-02 DO YOU INSPECT OSCILLATORS	52	52	52
H	514	H3-03 DO YOU ALIGN OR ADJUST OSCILLATORS	43	43	41
H	515	H3-04 DO YOU REMOVE OR REPLACE COMPLETE OSCILLATORS	43	43	43
H	516	H3-05 DO YOU REMOVE OR REPLACE OSCILLATOR COMPONENTS	7	7	7
H	517	H3-06 DO YOU TROUBLESHOOT TO OSCILLATOR CIRCUIT LEVEL	30	30	29
H	518	H3-07 DO YOU TROUBLESHOOT TO OSCILLATOR COMPONENTS	7	7	7
H	519	H3-08 DO YOU USE OR REFER TO FEEDBACK	20	20	19
H	520	H3-09 DO YOU USE OR REFER TO FREQUENCY DETERMINING DEVICES (FDD)	15	15	16
H	521	H3-10 DO YOU USE OR REFER TO AMPLITUDE STABILITY	26	26	26
H	522	H3-11 DO YOU USE OR REFER TO FREQUENCY STABILITY	25	28	28
H	523	H3-12 DO YOU USE OR REFER TO DAMPING	7	7	7
H	524	H3-13 DO YOU USE OR REFER TO REGENERATIVE FEEDBACK	8	8	7
H	525	H3-14 DO YOU USE OR REFER TO PIEZOELECTRIC EFFECT	3	3	3
H	526	H3-15 DO YOU USE OR REFER TO CRITICAL DAMPING	3	5	5
H	527	H3-16 DO YOU USE OR REFER TO UNDER DAMPING	3	3	3
H	528	H3-17 DO YOU USE OR REFER TO OVER DAMPING	3	3	3
H	529	H3-18 DO YOU WORK WITH OSCILLATORS WHICH USE LC TANK CIRCUITS AS FDD	10	10	9
H	530	H3-19 DO YOU WORK WITH OSCILLATORS WHICH USE RC NETWORKS AS FDD	11	11	10
H	531	H3-20 DO YOU WORK WITH OSCILLATORS WHICH USE CRYSTALS AS FDD	7	7	7
H	532	H3-21 DO YOU WORK WITH OSCILLATORS WHICH USE DON'T REMEMBER WHICH TYPE OF FDD	26	26	28
H	533	H3-22 DO YOU WORK WITH SERIES HARTLEY SINUSOIDAL OSCILLATORS	3	3	3
H	534	H3-23 DO YOU WORK WITH SHUNT HARTLEY SINUSOIDAL OSCILLATORS	5	5	5
H	535	H3-24 DO YOU WORK WITH COLPITTS SINUSOIDAL OSCILLATORS	2	2	2
H	536	H3-25 DO YOU WORK WITH CLAPP SINUSOIDAL OSCILLATORS	2	2	2
H	537	H3-26 DO YOU WORK WITH BUTLER SINUSOIDAL OSCILLATORS	2	2	2
H	538	H3-27 DO YOU WORK WITH DON'T REMEMBER WHICH TYPE OF OSCILLATORS	30	30	31
I	539	I1-01 DO YOU WORK WITH MULTIVIBRATORS IN YOUR PRESENT JOB	13	13	10
I	540	I1-02 DO YOU INSPECT WAVE GENERATING OR SHAPING CIRCUITS	7	7	5
I	541	I1-03 DO YOU ALIGN OR ADJUST WAVE GENERATING OR SHAPING CIRCUITS	5	5	3
I	542	I1-04 DO YOU CALIBRATE WAVE GENERATING OR SHAPING CIRCUITS	5	5	3
I	543	I1-05 DO YOU TROUBLESHOOT TO WAVE GENERATING OR SHAPING CIRCUITS	5	5	3
I	544	I1-06 DO YOU TROUBLESHOOT TO WAVE GENERATING OR SHAPING CIRCUIT COMPONENTS	7	7	5
I	545	I1-07 DO YOU REMOVE OR REPLACE COMPLETE WAVE GENERATING OR SHAPING CIRCUITS	5	5	3
I	546	I1-08 DO YOU REMOVE OR REPLACE WAVE GENERATING OR SHAPING COMPONENTS	5	5	5
I	547	I1-09 DO YOU WORK WITH MULTIVIBRATORS WHICH CONTAIN LC TANK CIRCUITS	7	7	5

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK	SPC OS1	SPC OS2	SPC OS4
I 548 11-10 DO YOU WORK WITH MULTIVIBRATORS WHICH CONTAIN RC NETWORKS	10	10	9
I 549 11-11 DO YOU WORK WITH MULTIVIBRATORS WHICH CONTAIN CRYSTALS	2	2	2
I 550 11-12 DO YOU WORK WITH MULTIVIBRATORS WHICH CONTAIN DON'T REMEMBER WHICH TYPE OF FDD	5	5	3
I 551 11-13 DO YOU WORK WITH ASTABLE MULTIVIBRATORS	11	11	9
I 552 11-14 DO YOU WORK WITH MONOSTABLE MULTIVIBRATORS	11	11	9
I 553 11-15 DO YOU WORK WITH BISTABLE MULTIVIBRATORS	11	11	9
I 554 11-16 DO YOU WORK WITH DON'T REMEMBER WHICH TYPE MULTIVIBRATORS	3	3	3
I 555 12-01 DO YOU WORK WITH LIMITERS OR CLAMPERS IN YOUR PRESENT JOB	7	7	7
LIMITERS AND CLAMPERS			
I 556 12-02 DO YOU WORK WITH SERIES DIODE LIMITERS	3	3	3
I 557 12-03 DO YOU WORK WITH SHUNT DIODE LIMITERS	3	3	3
I 558 12-04 DO YOU WORK WITH LIMITERS WITH BIAS	3	3	3
I 559 12-05 DO YOU WORK WITH ZENER DIODE LIMITERS	8	8	9
I 560 12-06 DO YOU WORK WITH TRANSISTOR LIMITERS	7	7	7
I 561 12-07 DO YOU WORK WITH DON'T KNOW WHICH TYPE OF LIMITERS	2	2	2
I 562 12-08 DO YOU WORK WITH BASIC DIODE CLAMPING CIRCUITS	2	2	2
I 563 12-09 DO YOU WORK WITH DIODE CLAMPING CIRCUITS WITH BIAS	0	0	0
I 564 12-10 DO YOU WORK WITH DON'T KNOW WHICH TYPE OF CLAMPING CIRCUIT	0	0	0
I 565 13-01 IN YOUR PRESENT JOB, DO YOU WORK ON EQUIPMENT WHICH CONTAINS ELECTRON TUBES	3	3	3
ELECTRON TUBES			
I 566 13-02 DO YOU CHECK ELECTRON TUBES TO SEE IF THEY ARE GOOD	5	5	3
I 567 13-03 DO YOU USE TUBE TESTERS TO CHECK ELECTRON TUBES	3	3	3
I 568 13-04 DO YOU USE MULTIMETERS TO CHECK ELECTRON TUBES	3	3	3
I 569 13-05 DO YOU USE SCOPES TO CHECK ELECTRON TUBES	2	2	2
I 570 13-06 DO YOU USE SUBSTITUTION TO CHECK ELECTRON TUBES	3	3	2
I 571 13-07 DO YOU USE OR REFER TO CUTOFF	2	2	2
I 572 13-08 DO YOU USE OR REFER TO PEAK INVERSE VOLTAGE RATING	0	0	0
I 573 13-09 DO YOU USE OR REFER TO PEAK CURRENT RATING	0	0	0
I 574 13-10 DO YOU USE OR REFER TO TRANSIT TIME	0	0	0
I 575 13-11 DO YOU USE OR REFER TO PLATE DISSIPATION RATING	0	0	0
I 576 13-12 DO YOU USE OR REFER TO DC PLATE RESISTANCE	2	2	2
I 577 13-13 DO YOU USE OR REFER TO SATURATION	0	0	0
I 578 13-14 DO YOU COMPUTE ACTUAL VALUES OF THE DC PLATE RESISTANCE FOR ELECTRON TUBES	0	0	0
I 579 13-15 DO YOU USE OR REFER TO PLATE VOLTAGE	0	0	0
I 580 13-16 DO YOU USE OR REFER TO PLATE CURRENT	0	0	0
I 581 13-17 DO YOU USE OR REFER TO GRID VOLTAGE	0	0	0
I 582 13-18 DO YOU USE OR REFER TO GRID CURRENT	0	0	0
I 583 13-19 DO YOU USE OR REFER TO CATHODE VOLTAGE	0	0	0
I 584 13-20 DO YOU USE OR REFER TO CATHODE CURRENT	0	0	0
I 585 13-21 DO YOU USE OR REFER TO THE TRIODE AMPLIFICATION FACTOR (THE AMPLIFICATION FACTOR FOR TRIODES IS DEFINED AS THE RATIO OF CHANGE IN PLATE VOLTAGE TO A CHANGE IN GRID VOLTAGE)	0	0	0

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK	SPC 051	SPC 052	SPC 054
586 13-22 DO YOU CALCULATE ACTUAL VALUES OF TRIODE AMPLIFICATION FACTORS	0	0	0
587 13-23 DO YOU USE OR REFER TO MULTIGRID (TETRODE, PENTODE, ETC) AMPLIFICATION FACTORS	0	0	0
588 13-24 DO YOU USE OR REFER TO ELECTRON TUBE TRANSCONDUCTANCE (G, WHICH IS MEASURED IN MHOS)	0	0	0
589 13-25 DO YOU CALCULATE ACTUAL VALUES OF ELECTRON TUBE TRANSCONDUCTANCES	0	0	0
590 13-26 DO YOU USE OR REFER TO THE ELECTRON TUBE PARAMETER CALLED AC PLATE RESISTANCE	0	0	0
591 13-27 DO YOU CALCULATE ACTUAL VALUES OF AC PLATE RESISTANCE	0	0	0
592 13-28 DO YOU USE OR REFER TO ELECTRON TUBE INTERELECTRODE CAPACITANCE	0	0	0
593 13-29 DO YOU USE OR REFER TO CHARACTERISTIC CURVES IN YOUR WORK WITH ELECTRON TUBES	0	0	0
594 13-30 DO YOU USE CHARACTERISTIC CURVES TO SELECT PLATE VOLTAGE FOR A SPECIFIED BIAS	0	0	0
595 13-31 DO YOU USE CHARACTERISTIC CURVES TO SELECT PLATE CURRENT FOR A SPECIFIED BIAS	0	0	0
596 13-32 DO YOU USE CHARACTERISTIC CURVES TO SELECT BIAS REQUIRED FOR CUTOFF	0	0	0
597 13-33 DO YOU USE CHARACTERISTIC CURVES TO SELECT BIAS REQUIRED FOR SATURATION	0	0	0
598 13-34 DO YOU USE OR REFER TO ELECTRON TUBE AMPLIFIER GAIN	0	0	0
599 13-35 DO YOU USE OR REFER TO ELECTRON TUBE AMPLIFIER EFFICIENCY	0	0	0
600 13-36 DO YOU USE TEST TUBE CHECKERS TO DETERMINE ELECTRON TUBE AMPLIFIER GAIN	2	2	2
601 13-37 DO YOU USE MULTIMETERS TO DETERMINE ELECTRON TUBE AMPLIFIER GAIN	0	0	0
602 13-38 DO YOU USE OSCILLOSCOPES TO DETERMINE ELECTRON TUBE AMPLIFIER GAIN	0	0	0
603 13-39 DO YOU USE CHARACTERISTIC CURVES TO DETERMINE ELECTRON TUBE AMPLIFIER GAIN	0	0	0
604 13-40 DO YOU CALCULATE ANY ELECTRON TUBE CAPACITANCES SUCH AS INPUT CAPACITANCE	0	0	0
605 13-41 DO YOU USE OR REFER TO TUBE SOCKET NOTATION	2	2	2
606 13-42 DO YOU USE OR REFER TO PIN NUMBERING SYSTEMS	3	3	3
607 13-43 DO YOU USE OR REFER TO THE TYPE OF MATERIAL OR THE OPERATING TEMPERATURE OF THE EMITTING SURFACE IN THE ELECTRON TUBES YOU WORK ON	0	0	0
608 13-44 DO YOU USE OR REFER TO TUBE SUBSTITUTION MATERIAL SUCH AS MANUALS OR CHARTS	2	2	2
609 JI-01 DO YOU WORK WITH ELECTRON TUBE AMPLIFIERS OR CIRCUITS IN YOUR PRESENT JOB	0	0	0
610 JI-02 DO YOU DETERMINE THE CLASS OF OPERATION FOR ELECTRON TUBE AMPLIFIERS IN ORDER TO TROUBLESHOOT AMPLIFIER CIRCUITS	0	0	0

ELECTRON TUBE AMPLIFIERS
AND CIRCUITS

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK		SPC 051	SPC 052	SPC 054	
611	J1-03 DO YOU TROUBLESHOOT OR REPAIR PARAPHASE AMPLIFIERS	0	0	0	
612	J1-04 DO YOU TROUBLESHOOT OR REPAIR PUSH-PULL AMPLIFIERS	0	0	0	
613	J1-05 DO YOU TROUBLESHOOT OR REPAIR COMPOUND-CONNECTED AMPLIFIERS	0	0	0	
614	J1-06 DO YOU TROUBLESHOOT OR REPAIR CASCADE-CONNECTED AMPLIFIERS	0	0	0	
615	J1-07 DO YOU TROUBLESHOOT OR REPAIR DON'T KNOW WHICH TYPE OF AMPLIFIER	0	0	0	
616	J2-01 DO YOU WORK WITH GAS TUBES (NOT CATHODE OR COLD CATHODE)	0	0	0	SPECIAL PURPOSE ELECTRON TUBES
617	J2-02 DO YOU WORK WITH CATHODE-RAY TUBES	0	0	0	
618	J2-03 DO YOU USE OR REFER TO THE CHARACTERISTICS OF BEAM POWER TUBES	0	0	0	
619	J2-04 DO YOU TROUBLESHOOT OR REPAIR CIRCUITS IN WHICH BEAM POWER TUBES ARE USED	0	0	0	
620	J2-05 DO YOU USE OR REFER TO THE CHARACTERISTICS OF THYRATRONS	0	0	0	
621	J2-06 DO YOU TROUBLESHOOT OR REPAIR CIRCUITS IN WHICH THYRATRONS ARE USED	0	0	0	
622	J2-07 DO YOU USE OR REFER TO THE PRINCIPLES OF OPERATION OF ELECTRON GUNS OF CATHODE-RAY TUBES (CRT)	0	0	0	
623	J2-08 DO YOU USE OR REFER TO THE PRINCIPLES OF OPERATION OF ELECTROMAGNETIC DEFLECTION SYSTEMS OF CATHODE-RAY TUBES (CRT)	0	0	0	
624	J2-09 DO YOU USE OR REFER TO THE PRINCIPLES OF OPERATION OF ELECTROSTATIC DEFLECTION SYSTEMS OF CATHODE-RAY TUBES (CRT)	0	0	0	
625	J2-10 DO YOU USE OR REFER TO PHOSPHOR SCREENS	0	0	0	
626	J2-11 DO YOU USE OR REFER TO AQUADAG COATINGS	0	0	0	
627	J2-12 DO YOU USE OR REFER TO ELECTRON OPTICS	0	0	0	
628	J2-13 DO YOU USE OR REFER TO PERSISTENCE	0	0	0	
629	J2-14 DO YOU USE OR REFER TO DECAY TIMES	0	0	0	
630	J2-15 DO YOU USE OR REFER TO FLUORESCENCE	0	0	0	
631	J2-16 DO YOU USE OR REFER TO PHOSPHORESCENCE	0	0	0	
632	J3-01 DO YOU WORK ON TRANSMIT OR RECEIVE SYSTEMS IN YOUR PRESENT JOB	18	18	19	
633	J3-02 DO YOU PERFORM TASKS ON FREQUENCY CONVERTERS	3	3	3	HETERODYNING, MODULATION, AND DEMODULATION
634	J3-03 DO YOU PERFORM TASKS ON FREQUENCY MIXERS	5	5	5	
635	J3-04 DO YOU USE OR REFER TO THE HETERODYNING OF SIGNALS IN YOUR WORK WITH TRANSMIT OR RECEIVE SYSTEMS	0	0	0	
636	J3-05 DO YOU PERFORM TASKS ON REACTANCE MODULATORS	0	0	0	
637	J3-06 DO YOU PERFORM TASKS ON MODULATED OSCILLATORS	0	0	0	
638	K1-01 DO YOU WORK ON AM TRANSMIT OR RECEIVE SYSTEMS IN YOUR PRESENT JOB	0	0	0	
639	K1-02 DO YOU INSPECT AM TRANSMIT OR RECEIVE SYSTEMS	0	0	0	AM SYSTEMS
640	K1-03 DO YOU CLEAN AM TRANSMIT OR RECEIVE SYSTEMS	0	0	0	
641	K1-04 DO YOU ALIGN OR ADJUST AM TRANSMIT OR RECEIVE SYSTEMS	0	0	0	

PCT MBRS RESPONDING THESE BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK		SPC 051	SPC 052	SPC 054
642	K1-05 DO YOU TROUBLESHOOT TO AM TRANSMIT OR RECEIVE SYSTEMS	0	0	0
643	K1-06 DO YOU TROUBLESHOOT TO AM TRANSMIT OR RECEIVE COMPONENTS	0	0	0
644	K1-07 DO YOU REMOVE OR REPLACE AM TRANSMIT OR RECEIVE SYSTEMS	0	0	0
645	K1-08 DO YOU REMOVE OR REPLACE AM TRANSMIT OR RECEIVE COMPONENTS	0	0	0
646	K1-09 DO YOU PERFORM TASKS ON RF OSCILLATORS	0	0	0
647	K1-10 DO YOU PERFORM TASKS ON RF AMPLIFIERS	2	2	2
648	K1-11 DO YOU PERFORM TASKS ON AUDIO AMPLIFIERS	2	2	2
649	K1-12 DO YOU PERFORM TASKS ON POWER AMPLIFIERS	2	2	2
650	K1-13 DO YOU PERFORM TASKS ON LOCAL OSCILLATORS	2	2	2
651	K1-14 DO YOU PERFORM TASKS ON IF AMPLIFIERS	0	0	0
652	K1-15 DO YOU PERFORM TASKS ON DETECTORS	0	0	0
653	K1-16 DO YOU PERFORM TASKS ON DON'T REMEMBER WHICH AM STAGE	0	0	0
654	K1-17 DO YOU USE OR REFER TO AMPLITUDE STABILIZATION IN TRANSMITTERS	0	0	0
655	K1-18 DO YOU USE OR REFER TO FREQUENCY STABILIZATION IN TRANSMITTERS	0	0	0
656	K1-19 DO YOU USE OR REFER TO SENSITIVITY OF RECEIVERS	0	0	0
657	K1-20 DO YOU USE OR REFER TO SELECTIVITY OF RECEIVERS	0	0	0
658	K1-21 DO YOU USE OR REFER TO 2ND HARMONIC DISTORTION	0	0	0
659	K1-22 DO YOU USE OR REFER TO BANDPASS DISTORTION	0	0	0
660	K1-23 DO YOU USE OR REFER TO SQUARE LAW DISTORTION	0	0	0
661	K1-24 DO YOU USE OR REFER TO CO-CHANNEL INTERFERENCE	0	0	0
662	K1-25 DO YOU USE OR REFER TO IMAGE FREQUENCIES IN RECEIVERS	0	0	0
663	K1-26 DO YOU USE OR REFER TO SIGNAL TO IMAGE RATIOS OR IMAGE REJECTION RATIOS	0	0	0
664	K1-27 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH AM TRANSMITTER SCHEMATIC DIAGRAMS	0	0	0
665	K1-28 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH AM RECEIVER SCHEMATIC DIAGRAMS	0	0	0
	FM SYSTEMS			
666	K2-01 DO YOU WORK WITH FM TRANSMIT OR RECEIVE SYSTEMS IN YOUR PRESENT JOB	2	2	2
667	K2-02 DO YOU INSPECT FM TRANSMIT OR RECEIVE SYSTEMS	2	2	2
668	K2-03 DO YOU CLEAN FM TRANSMIT OR RECEIVE SYSTEMS	2	2	2
669	K2-04 DO YOU ALIGN FM TRANSMIT OR RECEIVE SYSTEMS	2	2	2
670	K2-05 DO YOU TROUBLESHOOT TO FM TRANSMIT OR RECEIVE SYSTEMS	2	2	2
671	K2-06 DO YOU TROUBLESHOOT TO FM TRANSMIT OR RECEIVE COMPONENTS	2	2	2
672	K2-07 DO YOU REMOVE OR REPLACE FM TRANSMIT OR RECEIVE SYSTEMS	0	0	0
673	K2-08 DO YOU REMOVE OR REPLACE FM TRANSMIT OR RECEIVE COMPONENTS	2	2	2
674	K2-09 DO YOU PERFORM TASKS ON AUDIO AMPLIFIERS	2	2	2
675	K2-10 DO YOU PERFORM TASKS ON FREQUENCY MULTIPLIERS	0	0	0

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSX

		SPC 051	SPC 052	SPC 054
K 676	K2-11 DO YOU PERFORM TASKS ON DRIVERS (INTERMEDIATE AMPLIFIERS)	0	0	0
K 677	K2-12 DO YOU PERFORM TASKS ON POWER AMPLIFIERS	0	0	0
K 678	K2-13 DO YOU PERFORM TASKS ON RF AMPLIFIERS	0	0	0
K 679	K2-14 DO YOU PERFORM TASKS ON FREQUENCY CONVERTERS	0	0	0
K 680	K2-15 DO YOU PERFORM TASKS ON IF AMPLIFIERS	0	0	0
K 681	K2-16 DO YOU PERFORM TASKS ON LIMITERS	0	0	0
K 682	K2-17 DO YOU PERFORM TASKS ON FREQUENCY DISCRIMINATORS	0	0	0
K 683	K2-18 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH SCHEMATIC DIAGRAMS OF FM TRANSMITTERS	2	2	2
K 684	K2-19 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH SCHEMATIC DIAGRAMS OF FM RECEIVERS	2	2	2
K 685	K3-01 DO YOU CONVERT DECIMAL (BASE 10) NUMBERS TO OCTAL (BASE 8) NUMBERS	0	0	0
K 686	K3-02 DO YOU CONVERT DECIMAL NUMBERS TO BINARY (BASE 2) NUMBERS	0	0	0
K 687	K3-03 DO YOU CONVERT OCTAL NUMBERS TO DECIMAL NUMBERS	0	0	0
K 688	K3-04 DO YOU CONVERT OCTAL NUMBERS TO BINARY NUMBERS	0	0	0
K 689	K3-05 DO YOU CONVERT BINARY NUMBERS TO DECIMAL NUMBERS	2	2	2
K 690	K3-06 DO YOU CONVERT BINARY NUMBERS TO OCTAL NUMBERS	2	2	2
K 691	K3-07 DO YOU ADD BINARY NUMBERS TO GET A SUM	2	2	2
K 692	K3-08 DO YOU SUBTRACT BINARY NUMBERS USING THE END-AROUND-CARRY METHOD	0	0	0
K 693	K3-09 DO YOU SUBTRACT BINARY NUMBERS USING THE DIRECT SUBTRACTION METHOD	2	2	2
K 694	K3-10 DO YOU ADD OCTAL NUMBERS TO GET A SUM	0	0	0
L 695	L1-01 IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS RELATING TO LOGIC FUNCTIONS	16	16	17
L 696	L1-02 DO YOU CONSTRUCT TRUTH TABLES FOR AND AND LOGIC SYMBOLS OR GATES	3	3	3
L 697	L1-03 DO YOU CONSTRUCT TRUTH TABLES FOR OR LOGIC SYMBOLS OR GATES	3	3	3
L 698	L1-04 DO YOU CONSTRUCT TRUTH TABLES FOR AND OR OR LOGIC SYMBOLS WITH STATE INDICATORS	3	3	3
L 699	L1-05 DO YOU CONSTRUCT TRUTH TABLES FOR EXCLUSIVE OR LOGIC SYMBOLS OR GATES	3	3	3
L 700	L1-06 DO YOU USE OR REFER TO TRUTH TABLES FOR AND LOGIC SYMBOLS OR GATES	7	7	7
L 701	L1-07 DO YOU USE OR REFER TO TRUTH TABLES FOR OR LOGIC SYMBOLS OR GATES	7	7	7
L 702	L1-08 DO YOU USE OR REFER TO TRUTH TABLES FOR AND OR OR LOGIC SYMBOLS WITH STATE INDICATORS	7	7	7
L 703	L1-09 DO YOU USE OR REFER TO TRUTH TABLES FOR EXCLUSIVE OR LOGIC SYMBOLS	7	7	7
L 704	L1-10 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR AND GATES	18	18	19
L 705	L1-11 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR OR GATES	18	18	19
L 706	L1-12 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR NAND OR NOR GATES	18	18	19

NUMBERING SYSTEMS

LOGIC FUNCTIONS

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK	SPC 051 18	SPC 052 18	SPC 054 19
707 L1-13 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR EXCLUSIVE OR GATES	3	3	3
708 L2-01 IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS RELATING TO BOOLEAN EQUATIONS, LOGIC DIAGRAMS, OR LOGIC CIRCUITS			
709 L2-02 DO YOU DRAW LOGIC SYMBOLS FOR DIRECT COUPLED TRANSISTOR LOGIC (DCTL) CIRCUITS	0	0	0
710 L2-03 DO YOU CONSTRUCT TRUTH TABLES FOR CURRENT MODE LOGIC (CML) CIRCUITS	2	2	2
711 L2-04 DO YOU DRAW LOGIC DIAGRAMS FROM GIVEN BOOLEAN EQUATIONS	0	0	0
712 L2-05 DO YOU MEASURE INPUTS OR OUTPUTS OF LOGIC GATES	3	3	3
713 L2-06 DO YOU DEVELOP OR ANALYZE BOOLEAN EQUATIONS IN THE PROCESS OF TROUBLESHOOTING DIGITAL CIRCUITS	3	3	3
714 L2-07 DO YOU ANALYZE LOGIC CIRCUITS BY USING BOOLEAN ALGEBRA	2	2	2
715 L2-08 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR DIRECT COUPLED TRANSISTOR LOGIC (DCTL) CIRCUIT GATES	3	3	3
716 L2-09 DO YOU USE OR REFER TO TRUTH TABLES FOR CURRENT MODE LOGIC (CML) CIRCUITS	3	3	3
717 L2-10 DO YOU USE OR REFER TO LOGIC DIAGRAMS CONSISTING OF MORE THAN ONE GATE	3	3	3
718 L2-11 DO YOU COMPUTE SUM AND CARRY EXPRESSIONS FOR SERIAL HALF OR FULL ADDER LOGIC DIAGRAMS	2	2	2
719 L2-12 DO YOU TRACE DATA FLOW THROUGH PARALLEL FULL ADDER LOGIC DIAGRAMS	0	0	0
720 L2-13 DO YOU WORK WITH ASTABLE (FREE RUNNING) MULTIVIBRATORS	3	3	3
721 L2-14 DO YOU WORK WITH BISTABLE (FLIP-FLOP) MULTIVIBRATORS	5	5	5
722 L2-15 DO YOU WORK WITH MONOSTABLE (ONE-SHOT) MULTIVIBRATORS	3	3	3
723 L2-16 DO YOU USE OR REFER TO FLIP-FLOP MULTIVIBRATOR SYMBOLS	7	7	7
724 L2-17 DO YOU USE OR REFER TO SINGLE-SHOT MULTIVIBRATOR SYMBOLS	3	3	3
725 L2-18 DO YOU USE OR REFER TO FLIP-FLOP CIRCUIT DIAGRAMS	5	5	5
726 L2-19 DO YOU USE OR REFER TO FLIP-FLOP TRUTH TABLES	5	5	5
727 L2-20 DO YOU USE OR REFER TO COMPLEMENTED FLIP-FLOP LOGIC SYMBOLS	3	3	3
728 L2-21 DO YOU USE OR REFER TO COMPLEMENTING FLIP-FLOP LOGIC SYMBOLS	3	3	3
729 L2-22 DO YOU MEASURE OUTPUT WAVESHAPES OF LOGIC CIRCUITS	5	5	5
730 L2-23 DO YOU TRACE DATA FLOW THROUGH COMPLEMENTED FLIP-FLOP SCHEMATIC DIAGRAMS	7	7	7
731 L2-24 DO YOU TRACE DATA FLOW THROUGH COMPLEMENTING FLIP-FLOP SCHEMATIC DIAGRAMS	7	7	7
732 L2-25 DO YOU CONSTRUCT TRUTH TABLES FOR J-K FLIP-FLOP LOGIC SYMBOLS	3	3	3

BOOLEAN EQUATIONS

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK

		SPC 051	SPC 052	SPC 054
733	L3-01 DO YOU WORK WITH DIGITAL COUNTERS IN YOUR PRESENT JOB	18	18	17
734	L3-02 DO YOU USE OR REFER TO UP-COUNTERS	8	8	9
735	L3-03 DO YOU USE OR REFER TO DOWN-COUNTERS	5	5	5
736	L3-04 DO YOU USE OR REFER TO SERIAL COUNTERS	5	5	5
737	L3-05 DO YOU USE OR REFER TO PARALLEL COUNTERS	5	5	5
738	L3-06 DO YOU USE OR REFER TO RING COUNTERS	3	3	3
739	L3-07 DO YOU USE OR REFER TO DECADE COUNTERS	7	7	5
740	L3-08 DO YOU USE OR REFER TO COUNT DETECT CIRCUITS	2	2	2
741	L3-09 DO YOU USE OR REFER TO DOWN CLOCKS	2	2	2
742	L3-10 DO YOU USE OR REFER TO UP CLOCKS	2	2	2
743	L3-11 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF UP-COUNTERS HAVING COMPLEMENTED FLIP-FLOPS	2	2	2
744	L3-12 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF SERIAL UP- OR DOWN-COUNTERS HAVING COMPLEMENTING FLIP-FLOPS	2	2	2
745	L3-13 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF DECADE COUNTERS	2	2	2
746	L3-14 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF RING COUNTERS	0	0	0
747	L3-15 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF SERIAL UP-COUNTERS FEEDING A PARALLEL STORAGE REGISTER	0	0	0
748	L3-16 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF SHIFT REGISTERS	0	0	0
749	L3-17 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF OTHER TYPE OF COUNTERS	3	3	3
750	L3-18 DO YOU COMPUTE THE BINARY COUNT AFTER SPECIFIC INPUT PULSES FOR UP-COUNTERS HAVING COMPLEMENTED FLIP-FLOPS	0	0	0
751	L3-19 DO YOU COMPUTE THE BINARY COUNT AFTER SPECIFIC INPUT PULSES FROM SERIAL UP- OR DOWN-COUNTERS HAVING COMPLEMENTING FLIP-FLOPS	0	0	0
752	L3-20 DO YOU COMPUTE THE BINARY COUNT AFTER SPECIFIC INPUT PULSES FOR SERIAL UP-COUNTERS FEEDING A PARALLEL STORAGE REGISTERS	0	0	0
753	L3-21 DO YOU COMPUTE THE BINARY COUNT AFTER SPECIFIC INPUT PULSES FOR OTHER TYPES OF COUNTERS	0	0	0
754	L3-22 DO YOU CONSTRUCT TRUTH TABLES FROM LOGIC DIAGRAMS OF DECADE COUNTERS	2	2	2
755	L3-23 DO YOU DETERMINE THE STATE OF EACH FLIP-FLOP IN RING COUNTERS FOR SPECIFIC INPUT PULSES	3	3	3
756	L3-24 DO YOU DETERMINE THE APPROPRIATE AND GATE NECESSARY IN COUNT DETECT CIRCUITS TO INDICATE A REQUIRED COUNT	2	2	2
M 757	M1-01 DO YOU WORK WITH SAWTOOTH WAVE GENERATORS	7	7	7
M 758	M1-02 DO YOU WORK WITH TRAPEZOIDAL WAVE GENERATORS	3	3	3
M 759	M1-03 DO YOU WORK WITH PULSED OSCILLATORS WITH REGENERATIVE FEEDBACK	5	5	3
M 760	M1-04 DO YOU WORK WITH PULSED OSCILLATORS WITHOUT REGENERATIVE FEEDBACK	7	7	7

COUNTERS

TIMING CIRCUITS

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK		SPC 051	SPC 052	SPC 054
761 M1-05 DO YOU WORK WITH BLOCKING OSCILLATORS		0	0	0
762 M1-06 DO YOU USE OR REFER TO RISE TIME		10	10	9
763 M1-07 DO YOU USE OR REFER TO FALL OR FLYBACK TIME		3	3	2
764 M1-08 DO YOU USE OR REFER TO SWEEP TIME		21	21	22
765 M1-09 DO YOU USE OR REFER TO ELECTRICAL LENGTH OF SAWTOOTH WAVEFORMS		8	8	9
766 M1-10 DO YOU USE OR REFER TO PHYSICAL LENGTH OF SAWTOOTH WAVEFORMS		7	7	7
767 M1-11 DO YOU USE OR REFER TO LINEAR SLOPE OF SAWTOOTH WAVEFORMS		5	5	5
768 M1-12 DO YOU USE OR REFER TO GATE LENGTH OF SAWTOOTH WAVEFORMS		0	0	0

USE OF SIGNAL GENERATORS

		SPC 051	SPC 052	SPC 054
769 M2-01 DO YOU USE SIGNAL GENERATORS IN YOUR PRESENT JOB		69	69	71
770 M2-02 DO YOU PERFORM OPERATIONAL CHECKS WHILE USING SIGNAL GENERATORS		61	61	62
771 M2-03 DO YOU PERFORM PERIODIC MAINTENANCE SUCH AS ADJUSTING, ALIGNING, OR CALIBRATING WHILE USING SIGNAL GENERATORS		33	33	34
772 M2-04 DO YOU TROUBLESHOOT TO AN ASSEMBLY OR SUBASSEMBLY WHILE USING SIGNAL GENERATORS		34	34	36
773 M2-05 DO YOU TROUBLESHOOT TO THE SMALLEST REPLACEABLE COMPONENT WHILE USING SIGNAL GENERATORS		26	26	28
774 M2-06 DO YOU USE AUDIO SINE-WAVE GENERATORS		64	64	66
775 M2-07 DO YOU USE AUDIO NON-SINUSOIDAL WAVE GENERATORS SUCH AS SQUARE WAVE, TRIANGLE, PULSE, OR SPIKE		5	5	3
776 M2-08 DO YOU USE RF GENERATORS LESS THAN 1,000 MH		3	3	3
777 M2-09 DO YOU USE RF GENERATORS GREATER THAN 1,000 MH		3	3	3
778 M2-10 DO YOU USE OTHER SPECIAL PURPOSE OR MULTI-FUNCTION GENERATORS		15	15	16

MOTORS AND GENERATORS

		SPC 051	SPC 052	SPC 054
779 M3-01 IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS DEALING WITH ALTERNATING CURRENT OR DIRECT CURRENT MOTORS OR GENERATORS		15	15	16
780 M3-02 DO YOU INSPECT MOTORS		13	13	14
781 M3-03 DO YOU CLEAN OR LUBRICATE MOTORS		13	13	14
782 M3-04 DO YOU OPERATE MOTORS		15	15	16
783 M3-05 DO YOU REMOVE OR REPLACE COMPLETE MOTORS		11	11	12
784 M3-06 DO YOU REMOVE OR REPLACE MOTOR PARTS		7	7	7
785 M3-07 DO YOU TROUBLESHOOT AS FAR AS CHECKING WIRE CONNECTIONS OF MOTORS		11	11	12
786 M3-08 DO YOU TROUBLESHOOT DOWN TO COMPONENT PARTS OF MOTORS		8	8	9
787 M3-09 DO YOU PERFORM ANY TASKS ON FIELD COILS		3	3	3
788 M3-10 DO YOU PERFORM ANY TASKS ON ARMATURES		5	5	5
789 M3-11 DO YOU PERFORM ANY TASKS ON ROTORS		7	7	7
790 M3-12 DO YOU PERFORM ANY TASKS ON BRUSHES		5	5	5
791 M3-13 DO YOU PERFORM ANY TASKS ON SLIP RINGS		7	7	7
792 M3-14 DO YOU PERFORM ANY TASKS ON COMMUTATORS		7	7	7
793 M3-15 DO YOU PERFORM ANY TASKS ON POLE PIECES		5	5	5

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK		SPC 051	SPC 052	SPC 054
794 M3-16	DO YOU DETERMINE OR MEASURE THE MAGNITUDE OF THE FORCE OR TORQUE CREATED BY A MOTOR	2	2	2
795 M3-17	DO YOU DETERMINE OR MEASURE THE DIRECTION OF THE MECHANICAL FORCE OR TORQUE CREATED BY A MOTOR	2	2	2
796 M3-18	DO YOU DETERMINE OR MEASURE THE MAGNITUDE OR DIRECTION OF THE INDUCED VOLTAGE IN MOTORS	3	3	3
797 M3-19	DO YOU WORK WITH SYNCHRONOUS MOTORS	2	2	2
798 M3-20	DO YOU WORK WITH INDUCTION MOTORS	2	2	2
799 M3-21	DO YOU WORK WITH SPLIT-PHASE MOTORS	0	0	0
800 M3-22	DO YOU WORK WITH SOME COMBINATION OF THE ABOVE MOTORS	5	5	5
801 M3-23	DO YOU INSPECT GENERATORS	3	3	3
802 M3-24	DO YOU CLEAN OR LUBRICATE GENERATORS	2	2	2
804 M3-25	DO YOU OPERATE GENERATORS	3	3	3
804 M3-26	DO YOU REMOVE OR REPLACE COMPLETE GENERATORS	2	2	2
805 M3-27	DO YOU REMOVE OR REPLACE GENERATOR PARTS	0	0	0
806 M3-28	DO YOU TROUBLESHOOT AS FAR AS CHECKING WIRE CONNECTIONS OF GENERATORS	2	2	2
807 M3-29	DO YOU TROUBLESHOOT DOWN TO COMPONENT PARTS OF GENERATORS	2	2	2
808 N1-01	DO YOU WORK WITH METERS IN YOUR PRESENT JOB	74	74	76
809 N1-02	DO YOU CONCEPTUALIZE OR CONSIDER THE FUNCTIONS OF PERMANENT MAGNETS	8	8	9
810 N1-03	DO YOU CONCEPTUALIZE OR CONSIDER THE FUNCTIONS OF MOVING COILS	11	11	12
811 N1-04	DO YOU CONCEPTUALIZE OR CONSIDER THE FUNCTIONS OF SPIRAL SPRINGS	7	7	7
812 N1-05	DO YOU READ METER SCALES	72	72	74
813 N1-06	DO YOU EXTEND THE RANGE OF AMMETERS	31	31	33
814 N1-07	DO YOU ZERO OHMMETERS	75	75	78
815 N1-08	DO YOU ZERO AMMETERS	15	15	16
816 N1-09	DO YOU EXTEND THE RANGE OF VOLTMETERS	30	30	31
817 N1-10	DO YOU USE OR REFER TO VOLTMETER SENSITIVITY (EXPRESSED IN UNITS OF OHMS PER VOLT)	38	38	40
818 N2-01	DO YOU WORK WITH SATURABLE REACTORS OR MAGNETIC AMPLIFIERS IN YOUR PRESENT JOB	2	2	2
819 N2-02	DO YOU INSPECT MAGNETIC AMPLIFIERS OR SATURABLE REACTORS	2	2	2
820 N2-03	DO YOU CLEAN MAGNETIC AMPLIFIERS OR SATURABLE REACTORS	2	2	2
821 N2-04	DO YOU ADJUST MAGNETIC AMPLIFIERS OR SATURABLE REACTORS	2	2	2
822 N2-05	DO YOU TROUBLESHOOT MAGNETIC AMPLIFIERS OR SATURABLE REACTORS	2	2	2
823 N2-06	DO YOU REMOVE OR REPLACE MAGNETIC AMPLIFIERS OR SATURABLE REACTORS	2	2	2
824 N2-07	DO YOU REMOVE OR REPLACE MAGNETIC AMPLIFIER OR SATURABLE REACTOR COMPONENTS	2	2	2

METER MOVEMENTS

SATURABLE REACTORS AND MAGNETIC AMPLIFIERS

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	DY-TSK	SPC GS1	SPC GS2	SPC GS4
N	825 N2-08 DO YOU USE OR REFER TO HYSTERESIS CURVES OR LOOPS	0	0	0
N	826 N2-09 DO YOU INTERPRET SCHEMATIC DRAWINGS TO DEVELOP OUTPUT WAVEFORMS ACROSS REACTOR WINDINGS OR LOAD RESISTORS OF SINGLE WINDING SATURABLE REACTORS	2	2	2
N	827 N2-10 DO YOU MEASURE OUTPUT WAVEFORMS ACROSS REACTOR WINDINGS OR LOAD RESISTORS OF SINGLE WINDING SATURABLE REACTORS	2	2	2
N	828 N2-11 DO YOU INTERPRET SCHEMATIC DRAWINGS TO DEVELOP OUTPUT WAVEFORMS FOR MAGNETIC AMPLIFIERS	0	0	0
N	829 N2-12 DO YOU USE OR REFER TO COERCIVE FORCE IN SATURABLE REACTORS	0	0	0
N	830 N2-13 DO YOU USE OR REFER TO RESIDUAL MAGNETISM IN SATURABLE REACTORS	0	0	0
N	831 N2-14 DO YOU USE OR REFER TO FLUX DENSITY IN SATURABLE REACTORS	0	0	0
N	832 N2-15 DO YOU USE OR REFER TO POINT OF SATURATION IN SATURABLE REACTORS	2	2	2
N	833 N2-16 DO YOU USE OR REFER TO SATURABLE REACTOR SCHEMATIC SYMBOLS	2	2	2
N	834 N3-01 DO YOU WORK WITH WAVESHAPING CIRCUITS IN YOUR PRESENT JOB	13	13	14
N	835 N3-02 DO YOU USE OR REFER TO TRANSIENT INTERVALS	3	3	3
N	836 N3-03 DO YOU USE OR REFER TO PULSE WIDTH (PW)	11	11	12
N	837 N3-04 DO YOU USE OR REFER TO PULSE RECURRENCE TIME (PRT)	11	11	12
N	838 N3-05 DO YOU USE OR REFER TO PULSE RECURRENCE FREQUENCY (PRF)	7	7	7
N	839 N3-06 DO YOU USE OR REFER TO DIFFERENTIATING CIRCUITS	5	5	5
N	840 N3-07 DO YOU USE OR REFER TO INTEGRATING CIRCUITS	7	7	7
N	841 N3-08 DO YOU USE OR REFER TO THE CLASSIFICATION OF TIME CONSTANTS (TC) AS LONG, MEDIUM, OR SHORT	7	7	7
N	842 N3-09 DO YOU DETERMINE WHETHER AN LR OR RC CIRCUIT IS DIFFERENTIATING OR INTEGRATING BASED ON THE TIME CONSTANT AND OUTPUT CONFIGURATION	3	3	3
N	843 N3-10 DO YOU WORK WITH SQUARE WAVE GENERATORS	8	8	9
N	844 N3-11 DO YOU WORK WITH RECTANGULAR WAVE GENERATORS	3	3	3
O	845 O1-01 DO YOU WORK ON SINGLE SIDEBAND SYSTEMS IN YOUR PRESENT JOB	0	0	0
O	846 O1-02 DO YOU INSPECT SSB TRANSMIT OR RECEIVE SYSTEMS	0	0	0
O	847 O1-03 DO YOU CLEAN SSB TRANSMIT OR RECEIVE SYSTEMS	0	0	0
O	848 O1-04 DO YOU ALIGN SSB TRANSMIT OR RECEIVE SYSTEMS	0	0	0
O	849 O1-05 DO YOU TROUBLESHOOT TO SSB TRANSMIT OR RECEIVE SYSTEMS	0	0	0
O	850 O1-06 DO YOU TROUBLESHOOT TO SSB TRANSMIT OR RECEIVE COMPONENTS	0	0	0
O	851 O1-07 DO YOU REMOVE OR REPLACE SSB TRANSMIT OR RECEIVE SYSTEMS	0	0	0
O	852 O1-08 DO YOU REMOVE OR REPLACE SSB TRANSMIT OR RECEIVE COMPONENTS	0	0	0

WAVESHAPING CIRCUITS

SINGLE SIDEBAND SYSTEMS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK	SPC 051	SPC 052	SPC 054
853 01-09 DO YOU PERFORM TASKS ON SSB AUDIO AMPLIFIERS	0	0	0
854 01-10 DO YOU PERFORM TASKS ON SSB BALANCED MODULATORS	0	0	0
855 01-11 DO YOU PERFORM TASKS ON SSB CARRIER OSCILLATORS	0	0	0
856 01-12 DO YOU PERFORM TASKS ON SSB LC FILTERS	0	0	0
857 01-13 DO YOU PERFORM TASKS ON SSB CRYSTAL FILTERS	0	0	0
858 01-14 DO YOU PERFORM TASKS ON SSB MECHANICAL FILTERS	0	0	0
859 01-15 DO YOU PERFORM TASKS ON SSB OSCILLATORS	0	0	0
860 01-16 DO YOU PERFORM TASKS ON SSB MIXERS	0	0	0
861 01-17 DO YOU PERFORM TASKS ON SSB DRIVERS	0	0	0
862 01-18 DO YOU PERFORM TASKS ON SSB POWER AMPLIFIERS	0	0	0
863 01-19 DO YOU PERFORM TASKS ON SSB RF AMPLIFIERS	0	0	0
864 01-20 DO YOU PERFORM TASKS ON SSB FREQUENCY CONVERTERS	0	0	0
865 01-21 DO YOU PERFORM TASKS ON SSB IF AMPLIFIERS	0	0	0
866 01-22 DO YOU PERFORM TASKS ON SSB DEMODULATORS	0	0	0
867 01-23 DO YOU PERFORM TASKS ON SSB DON'T REMEMBER WHICH SSB SYSTEM STAGES	0	0	0
868 01-24 DO YOU USE OR REFER TO SELECTIVE FADING	0	0	0
869 01-25 DO YOU USE OR REFER TO PEAK POWER	0	0	0
870 01-26 DO YOU USE OR REFER TO FREQUENCY STABILITY	0	0	0
871 01-27 DO YOU USE OR REFER TO RESPONSE CURVES FOR BANDWIDTH FILTERS	0	0	0
872 01-28 DO YOU CALCULATE PEAK POWER OR EFFECTIVE POWER OF SSB TRANSMITTERS	0	0	0
873 01-29 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH SSB TRANSMITTER SCHEMATIC DIAGRAMS	0	0	0
874 01-30 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH SSB RECEIVER SCHEMATIC DIAGRAMS	0	0	0
875 02-01 DO YOU WORK ON PULSE MODULATION SYSTEMS IN YOUR PRESENT JOB	3	3	3
876 02-02 DO YOU INSPECT PULSE MODULATION SYSTEMS	2	2	2
877 02-03 DO YOU CLEAN PULSE MODULATION SYSTEMS	2	2	2
878 02-04 DO YOU ALIGN PULSE MODULATION SYSTEMS	2	2	2
879 02-05 DO YOU TROUBLESHOOT TO PULSE MODULATION SYSTEMS	2	2	2
880 02-06 DO YOU TROUBLESHOOT TO PULSE MODULATION SYSTEM COMPONENTS	0	0	0
881 02-07 DO YOU REMOVE OR REPLACE PULSE MODULATION SYSTEMS	2	2	2
882 02-08 DO YOU REMOVE OR REPLACE PULSE MODULATION SYSTEM COMPONENTS	0	0	0
883 02-09 DO YOU WORK ON PULSE-AMPLITUDE MODULATION (PAM) SYSTEMS	0	0	0
884 02-10 DO YOU WORK ON PULSE-DURATION MODULATION (PDM) SYSTEMS	0	0	0
885 02-11 DO YOU WORK ON PULSE-POSITION MODULATION (PPM) SYSTEMS	0	0	0
886 02-12 DO YOU WORK ON PULSE-CODE MODULATION (PCM) SYSTEMS	0	0	0
887 02-13 DO YOU WORK ON LINE PULSING MODULATION SYSTEMS	0	0	0
888 02-14 DO YOU WORK ON DON'T REMEMBER WHICH TYPE OF MODULATION SYSTEM	3	3	3

PULSE MODULATION SYSTEMS

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	DY-TSK	SPC 051	SPC 052	SPC 054
0 889	02-15 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM POWER SUPPLIES	3	3	3
0 890	02-16 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM CHARGING CHORES AND CHARGING DIODES	2	2	2
0 891	02-17 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM PULSE FORMING NETWORKS	3	3	3
0 892	02-18 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM TIMERS	3	3	3
0 893	02-19 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM SWITCHES SUCH AS GAS THYRATRONS	0	0	0
0 894	02-20 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM PULSE TRANSFORMERS	2	2	2
0 895	02-21 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM TRANSMITTER TUBES	0	0	0
0 896	02-22 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM RF AMPLIFIERS	2	2	2
0 897	02-23 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM FREQUENCY CONVERTERS	2	2	2
0 898	02-24 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM IF AMPLIFIERS	0	0	0
0 899	02-25 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM DETECTORS	3	3	3
0 900	02-26 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM VIDEO AMPLIFIERS	0	0	0
0 901	02-27 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM POWER VIDEO AMPLIFIERS	0	0	0
0 902	02-28 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM STAGES	2	2	2
0 903	02-29 DON'T REMEMBER WHICH PULSE MODULATION SYSTEM DO YOU USE OR REFER TO PULSE RECURRENCE FREQUENCY (PRF)	0	0	0
0 904	02-30 DO YOU USE OR REFER TO PULSE RECURRENCE TIME (PRT)	2	2	2
0 905	02-31 DO YOU USE OR REFER TO PULSE WIDTH (PW)	3	3	3
0 906	02-32 DO YOU USE OR REFER TO PULSE SHAPE	2	2	2
0 907	02-33 DO YOU USE OR REFER TO PEAK POWER	2	2	2
0 908	02-34 DO YOU USE OR REFER TO AVERAGE POWER	2	2	2
0 909	02-35 DO YOU CALCULATE PULSE RECURRENCE TIME (PRT) OR PULSE RECURRENCE FREQUENCY (PRF)	0	0	0
0 910	02-36 DO YOU MEASURE PULSE RECURRENCE TIME (PRT) OR PULSE RECURRENCE FREQUENCY (PRF)	0	0	0
0 911	02-37 DO YOU USE FORMULAS TO CALCULATE AVERAGE POWER OR PEAK POWER OF PULSE MODULATION TRANSMIT SYSTEMS	0	0	0
0 912	02-38 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH PULSE MODULATION TRANSMITTER SCHEMATIC DIAGRAMS	2	2	2
0 913	02-39 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH PULSE MODULATION RECEIVER SCHEMATIC DIAGRAMS	2	2	2
0 914	03-01 DO YOU WORK WITH ANTENNAS IN YOUR PRESENT JOB	0	0	0
0 915	03-02 DO YOU INSPECT ANTENNAS	0	0	0

ANTENNAS

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK	Task	SPC 051	SPC 052	SPC 054
916 03-03	DO YOU CLEAN ANTENNAS	0	0	0
917 03-04	DO YOU PHYSICALLY ALIGN ANTENNAS	0	0	0
918 03-05	DO YOU ELECTRICALLY ALIGN ANTENNAS	0	0	0
919 03-06	DO YOU TROUBLESHOOT TO ANTENNAS	0	0	0
920 03-07	DO YOU TROUBLESHOOT TO ANTENNA COMPONENTS	0	0	0
921 03-08	DO YOU REMOVE OR INSTALL ANTENNAS	0	0	0
922 03-09	DO YOU REMOVE OR REPLACE COMPONENTS OF ANTENNAS	0	0	0
923 03-10	DO YOU USE OR REFER TO TECHNICAL DATA CONTAINING REPRESENTATIONS OF E OR ELECTRIC FIELD LINES	0	0	0
924 03-11	DO YOU USE OR REFER TO TECHNICAL DATA CONTAINING REPRESENTATIONS OF H OR MAGNETIC FIELD LINES	0	0	0
925 03-12	DO YOU DETERMINE THE DIRECTION OF THE MAGNETIC LINES IN RELATION TO THE ELECTRIC LINES OF FORCE FOR ANTENNAS	0	0	0
926 03-13	DO YOU USE OR REFER TO THE GENERAL RULE THAT ANTENNAS WHICH ARE OF CORRECT LENGTH (HALF-WAVE) ACT AS INDUCTIVE LOADS TO THE GENERATOR	0	0	0
927 03-14	DO YOU USE OR REFER TO THE GENERAL RULE THAT ANTENNAS WHICH ARE LONGER THAN A HALF-WAVE ACT AS INDUCTIVE LOADS TO THE GENERATOR	0	0	0
928 03-15	DO YOU USE OR REFER TO THE GENERAL RULE THAT ANTENNAS WHICH ARE SHORTER THAN A HALF-WAVE ACT AS CAPACITIVE LOADS TO THE GENERATOR	0	0	0
929 03-16	DO YOU WORK WITH HERTZ ANTENNAS	0	0	0
930 03-17	DO YOU WORK WITH MARCONI ANTENNAS	0	0	0
931 03-18	DO YOU WORK WITH BROADSIDE ARRAYS	0	0	0
932 03-19	DO YOU WORK WITH END-FIRE ARRAYS	0	0	0
933 03-20	DO YOU WORK WITH CARDIOID ARRAYS	0	0	0
934 03-21	DO YOU WORK WITH COLLINEAR ARRAYS	0	0	0
935 03-22	DO YOU USE OR REFER TO THE TERM ELECTROMAGNETIC INDUCTION FIELDS WHEN WORKING WITH ANTENNAS	0	0	0
936 03-23	DO YOU MEASURE ELECTROMAGNETIC INDUCTION FIELDS OF ANTENNAS	0	0	0
937 03-24	DO YOU USE OR REFER TO THE TERM ELECTROMAGNETIC RADIATION FIELDS WHEN WORKING WITH ANTENNAS	0	0	0
938 03-25	DO YOU MEASURE ELECTROMAGNETIC RADIATION FIELDS OF ANTENNAS	0	0	0
939 03-26	DO YOU USE OR REFER TO THE TIME PHASE OF ELECTRIC (E) AND MAGNETIC (H) COMPONENTS IN ANTENNA RADIATION	0	0	0
940 03-27	DO YOU USE OR REFER TO THE TIME PHASE OF ELECTRIC (E) AND MAGNETIC (H) COMPONENTS IN ANTENNA INDUCTION FIELD	0	0	0
941 03-28	ARE ANY OF THE ANTENNAS YOU WORK ON LINEARLY POLARIZED	0	0	0
942 03-29	ARE ANY OF THE ANTENNAS YOU WORK ON CIRCULARLY POLARIZED	0	0	0
943 03-30	DO YOU MEASURE OR DETERMINE THE POLARITY OF ANTENNAS YOU WORK ON	0	0	0
944 03-31	DO YOU CONSTRUCT, OR MAKE THE CALCULATIONS NECESSARY TO CONSTRUCT, ANTENNAS OF CORRECT LENGTH FOR SPECIFIC WAVELENGTHS	0	0	0

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DT-TSK	SPC 051	SPC 052	SPC 054
0 945 O3-32 DO THE ANTENNA ARRAYS YOU WORK WITH CONTAIN PARASITIC ELEMENTS	0	0	0
0 946 O3-33 DO THE ANTENNA ARRAYS YOU WORK WITH CONTAIN PARASITIC ELEMENTS SERVING AS DIRECTORS	0	0	0
0 947 O3-34 DO THE ANTENNA ARRAYS YOU WORK WITH CONTAIN PARASITIC ELEMENTS SERVING AS REFLECTORS	0	0	0
0 948 O3-35 DO THE ANTENNA ARRAYS YOU WORK WITH CONTAIN DON'T REMEMBER WHAT KIND OF ELEMENTS	0	0	0
0 949 O3-36 DO YOU WORK ON UNIDIRECTIONAL ANTENNAS	0	0	0
0 950 O3-37 DO YOU WORK ON BIDIRECTIONAL ANTENNAS	0	0	0
0 951 O3-38 DO YOU WORK ON DON'T REMEMBER THE DIRECTIONALITY	0	0	0
0 952 O3-39 DO YOU WORK WITH ROTAR ANTENNA ARRAYS	0	0	0
P 953 P1-01 IN YOUR PRESENT JOB DO YOU WORK WITH TRANSMISSION LINES (TRANSMISSION LINES ARE DEFINED TO INCLUDE LEADS BETWEEN RECEIVERS AND ANTENNAS, TELEPHONE LEADS, AS WELL AS HIGH VOLTAGE POWER LINES, ETC. DO NOT CONSIDER WAVEGUIDES AS TRANSMISSION LINES	54	54	55

TRANSMISSION LINES

DT-TSK	SPC 051	SPC 052	SPC 054
P 954 P1-02 DO YOU REFER TO OR USE COPPER LOSS OR I2R LOSS IN TRANSMISSION LINES	5	5	3
P 955 P1-03 DO YOU REFER TO OR USE SKIN EFFECTS OF HIGH FREQUENCY CURRENTS IN TRANSMISSION LINES	2	2	2
P 956 P1-04 DO YOU REFER TO OR USE RADIATION LOSS IN TRANSMISSION LINES	2	2	0
P 957 P1-05 DO YOU USE OR REFER TO DIELECTRIC LOSS IN TRANSMISSION LINES	5	5	3
P 958 P1-06 DO YOU USE OR REFER TO LEAKAGE LOSSES IN TRANSMISSION LINES	3	3	2
P 959 P1-07 DO YOU WORK WITH TWISTED PAIR TRANSMISSION LINES	38	38	38
P 960 P1-08 DO YOU WORK WITH TWIN LEAD TRANSMISSION LINES	26	26	26
P 961 P1-09 DO YOU WORK WITH OPEN TWO-WIRE TRANSMISSION LINES	21	21	21
P 962 P1-10 DO YOU WORK WITH FLEXIBLE COAXIAL CABLE TRANSMISSION LINES	13	13	12
P 963 P1-11 DO YOU WORK WITH RIGID COAXIAL CABLE TRANSMISSION LINES	2	2	2
P 964 P1-12 DO YOU TROUBLESHOOT TRANSMISSION LINES	51	51	52
P 965 P1-13 DO YOU ANALYZE VOLTAGE OR CURRENT WAVEFORMS IN TRANSMISSION LINES TO DETERMINE THE TYPE OF TERMINATION (OPEN, SHORTED, CAPACITIVE, INDUCTIVE)	11	11	10
P 966 P1-14 DO YOU SELECT APPROPRIATE TRANSMISSION LINES TERMINATIONS TO ACHIEVE DESIRED WAVEFORMS	7	7	5
P 967 P1-15 DO YOU USE OR REFER TO SCHEMATIC SYMBOLS FOR LINE TERMINATIONS IN TERMS OF CIRCUIT TERMINATIONS	36	36	36
P 968 P1-16 DO YOU MEASURE STANDING WAVE RATIOS (SR) OF TRANSMISSION LINES	3	3	3
P 969 P1-17 DO YOU CALCULATE STANDING WAVE RATIOS (SWR) OF TRANSMISSION LINES	2	2	2
P 970 P1-18 DO YOU PERFORM THE CALCULATIONS NECESSARY TO DETERMINE THE IMPEDANCE AND LENGTH OF QUARTER - WAVELENGTH MATCHING TRANSFORMERS TO MATCH TRANSMISSION LINES TO LOADS	5	5	5

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

Dy-TSK	SPC 051	SPC 052	SPC 054
P 971 P1-19 DO YOU WORK WITH TRANSMISSION LINES WHICH ARE MATCHED TO LOADS USING MATCHING TRANSFORMERS	30	30	29
P 972 P1-20 DO YOU WORK WITH TRANSMISSION LINES WHICH ARE MATCHED TO LOADS USING DELTA MATCHING	2	2	2
P 973 P1-21 DO YOU SELECT THE TYPE OF TRANSMISSION LINE NEEDED FOR PARTICULAR JOBS WITHOUT REFERRING TO TECHNICAL DATA	2	2	2
P 974 P1-22 DO YOU USE OR REFER TO THE TERM CHARACTERISTIC IMPEDANCE (Z0) OF TRANSMISSION LINES	7	7	7
P 975 P1-23 DO YOU CALCULATE THE CHARACTERISTIC IMPEDANCE (Z0) OF TRANSMISSION LINES	3	3	3
P 976 P1-24 DO YOU USE OR REFER TO THE TERM CUTOFF FREQUENCY OF TRANSMISSION LINES	3	3	3
P 977 P1-25 DO YOU USE OR REFER TO THE TERM VELOCITY FACTOR (K) OF TRANSMISSION LINES	0	0	0
P 978 P1-26 DO YOU COMPUTE THE ELECTRICAL LENGTH OF TRANSMISSION LINES FOR PARTICULAR FREQUENCIES	2	2	2
P 979 P1-27 DO YOU CONSTRUCT TRANSMISSION LINES OF PARTICULAR ELECTRICAL LENGTH FOR GIVEN FREQUENCIES	0	0	0
P 980 P1-28 DO YOU USE OR REFER TO THE GENERAL RULE THAT AS THE FREQUENCY INCREASES AND THE PHYSICAL LENGTH OF TRANSMISSION LINES REMAIN CONSTANT, THE ELECTRICAL LENGTH INCREASES	3	3	3
P 981 P1-29 DO YOU WORK WITH NONRESONANT (FLAT) TRANSMISSION LINES	7	7	5
P 982 P1-30 DO YOU WORK WITH RESONANT TRANSMISSION LINES	8	8	9
P 983 P1-31 DO YOU WORK WITH TRANSMISSION LINES WHICH ARE MATCHED TO LOADS USING STUB MATCHING	2	2	2
P 984 P2-01 DO YOU WORK WITH WAVEGUIDES OR CAVITY RESONATORS IN YOUR PRESENT JOB	0	0	0
P 985 P2-02 DO YOU INSPECT WAVEGUIDES OR CAVITY RESONATORS	0	0	0
P 986 P2-03 DO YOU CLEAN WAVEGUIDES OR CAVITY RESONATORS	0	0	0
P 987 P2-04 DO YOU BEND WAVEGUIDES OR CAVITY RESONATORS	0	0	0
P 988 P2-05 DO YOU TWIST WAVEGUIDES OR CAVITY RESONATORS	0	0	0
P 989 P2-06 DO YOU PRESSURIZE WAVEGUIDES OR CAVITY RESONATORS	0	0	0
P 990 P2-07 DO YOU PURGE WAVEGUIDES OR CAVITY RESONATORS	0	0	0
P 991 P2-08 DO YOU TROUBLESHOOT WAVEGUIDES OR CAVITY RESONATORS	0	0	0
P 992 P2-09 DO YOU REMOVE OR INSTALL COMPLETE WAVEGUIDES	0	0	0
P 993 P2-10 DO YOU REMOVE OR INSTALL WAVEGUIDE SECTIONS	0	0	0
P 994 P2-11 DO YOU REMOVE OR INSTALL DUMMY LOADS	0	0	0
P 995 P2-12 DO YOU REMOVE OR INSTALL E BENDS	0	0	0
P 996 P2-13 DO YOU REMOVE OR INSTALL H BENDS	0	0	0
P 997 P2-14 DO YOU REMOVE OR INSTALL OTHER BENDS	0	0	0
P 998 P2-15 DO YOU REMOVE OR INSTALL CHOKE JOINTS	0	0	0
P 999 P2-16 DO YOU REMOVE OR INSTALL ROTATING JOINTS	0	0	0
P1000 P2-17 DO YOU REMOVE OR INSTALL DIRECTIONAL COUPLERS	0	0	0
P1001 P2-18 DO YOU REMOVE OR INSTALL BIDIRECTIONAL COUPLERS	0	0	0
P1002 P2-19 DO YOU USE OR REFER TO THE WALL OF WAVEGUIDES	0	0	0

WAVEGUIDES AND CAVITY RESONATORS

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK	SPC 051	SPC 052	SPC 054
P1003 P2-20 DO YOU USE OR REFER TO "B" WALL OF WAVEGUIDES	0	0	0
P1004 P2-21 DO YOU USE OR REFER TO CUTOFF FREQUENCY OF WAVEGUIDES	0	0	0
P1005 P2-22 DO YOU USE OR REFER TO FREQUENCY-DETERMINING WALL OF WAVEGUIDES	0	0	0
P1006 P2-23 DO YOU USE OR REFER TO POWER-DETERMINING WALL OF WAVEGUIDES	0	0	0
P1007 P2-24 DO YOU USE OR REFER TO ELECTRIC FIELD BOUNDARY CONDITIONS	0	0	0
P1008 P2-25 DO YOU USE OR REFER TO MAGNETIC FIELD BOUNDARY CONDITIONS	0	0	0
P1009 P2-26 DO YOU USE OR REFER TO DUPLEXER FIELD BOUNDARY CONDITIONS	0	0	0
P1010 P2-27 DO YOU USE OR REFER TO THE GENERAL RULE THAT MOST WAVEGUIDES ARE MADE WITH A "B" WALL SIZE OF .7 WAVELENGTHS OF THE OPERATING FREQUENCY	0	0	0
P1011 P2-28 DO YOU USE OR REFER TO THE GENERAL RULE THAT MOST "A" WALLS RANGE FROM .2 TO .5 WAVELENGTHS IN SIZE, WITH .35 USED AS AN AVERAGE	0	0	0
P1012 P2-29 ARE YOU CONCERNED WITH THE MATERIAL (SUCH AS BRASS) WHICH WAVEGUIDES ARE MADE OF	0	0	0
P1013 P2-30 DO YOU COMPUTE THE LENGTH OF A WAVEGUIDE FOR SPECIFIC INSTALLATION	0	0	0
P1014 P2-31 DO YOU USE THE RIGHT HAND RULE TO DETERMINE THE DIRECTION OF PROPAGATION, DIRECTION OF "E" FIELD, OR DIRECTION OF "H" FIELD IN WAVEGUIDES	0	0	0
P1015 P2-32 DO YOU USE OR REFER TO THE TIME PHASE OF PEAK "E" OR "H" LINES IN WAVEGUIDES	0	0	0
P1016 P2-33 DO YOU MEASURE THE TIME PHASE OF "E" OR "H" LINES IN WAVEGUIDES	0	0	0
P1017 P2-34 DO YOU USE OR REFER TO THE SPACE QUADRATURE OF "E" OR "H" LINES IN WAVEGUIDES	0	0	0
P1018 P2-35 ARE HIGH POWER PROBES USED ON WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	0	0	0
P1019 P2-36 ARE LOW POWER PROBES USED ON WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	0	0	0
P1020 P2-37 ARE LOOPS USED ON WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	0	0	0
P1021 P2-38 ARE APERTURES (WINDOWS OR IRISES) USED ON WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	0	0	0
P1022 P2-39 ARE YOU DON'T REMEMBER THE KIND OF ENERGY COUPLING USED ON WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	0	0	0
P1023 P2-40 DO YOU DETERMINE WHERE PROBES SHOULD BE MOUNTED IN WAVEGUIDES OR CAVITY RESONATORS WITHOUT REFERRING TO TECHNICAL DATA	0	0	0
P1024 P2-41 DO YOU DETERMINE THE POSITIONING OF LOOPS IN WAVEGUIDES OR CAVITY RESONATORS WITHOUT REFERRING TO TECHNICAL DATA	0	0	0

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

MICROWAVE AMPLIFIERS AND OSCILLATORS

DY-TSK	SPC 051	SPC 052	SPC 054
P1025 P2-42 DO YOU DETERMINE THE POSITIONING OR SIZE OF APERTURES IN WAVEGUIDES OR CAVITY RESONATORS WITHOUT REFERRING TO TECHNICAL DATA	0	0	0
P1026 P2-43 ARE CHOKE JOINTS USED IN WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	0	0	0
P1027 P2-44 ARE ROTATING JOINTS USED IN WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	0	0	0
P1028 P2-45 ARE DON'T REMEMBER THE KIND OF JOINTS USED IN WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	0	0	0
P1029 P2-46 DO YOU TUNE CAVITY RESONATORS USING CAPACITIVE TUNING	0	0	0
P1030 P2-47 DO YOU TUNE CAVITY RESONATORS USING INDUCTIVE TUNING	0	0	0
P1031 P2-48 DO YOU TUNE CAVITY RESONATORS USING VOLUME TUNING	0	0	0
P1032 P2-49 DO YOU TUNE CAVITY RESONATORS USING DON'T REMEMBER THE METHOD OF TUNING	0	0	0
P1033 P2-50 DO YOU MEASURE THE FREQUENCY OF SIGNALS IN CAVITY RESONATORS	0	0	0
P1034 P3-01 IN YOUR PRESENT JOB DO YOU WORK WITH KLYSTRONS, TRAVELING WAVE TUBES (TWT), PARAMETRIC AMPLIFIERS, OR MAGNETRONS	0	0	0
P1035 P3-02 DO YOU USE OR REFER TO INTERELECTRODE CAPACITANCE	0	0	0
P1036 P3-03 DO YOU USE OR REFER TO ELECTRON TRANSIT TIME	0	0	0
P1037 P3-04 DO YOU USE OR REFER TO LEAD INDUCTANCE	0	0	0
P1038 P3-05 DO YOU USE OR REFER TO RF LOSSES IN EXTERNAL CIRCUITRY	0	0	0
P1039 P3-06 DO YOU USE OR REFER TO PRINCIPLE OF ELECTRON VELOCITY MODULATION	0	0	0
P1040 P3-07 DO YOU USE OR REFER TO ELECTRON BUNCHING	0	0	0
P1041 P3-08 DO YOU WORK WITH TWO-CAVITY KLYSTRONS	0	0	0
P1042 P3-09 DO YOU WORK WITH THREE-CAVITY KLYSTRONS	0	0	0
P1043 P3-10 DO YOU WORK WITH REFLEX KLYSTRONS	0	0	0
P1044 P3-11 DO YOU WORK WITH TRAVELING-WAVE TUBES (TWT)	0	0	0
P1045 P3-12 DO YOU WORK WITH NONDEGENERATIVE PARAMETRIC AMPLIFIERS	0	0	0
P1046 P3-13 DO YOU WORK WITH UP-CONVERTER PARAMETRIC AMPLIFIERS	0	0	0
P1047 P3-14 DO YOU WORK WITH MAGNETRONS	0	0	0
P1048 P3-15 DO YOU INSPECT KLYSTRONS OR TWT	0	0	0
P1049 P3-16 DO YOU CLEAN KLYSTRONS OR TWT	0	0	0
P1050 P3-17 DO YOU TUNE KLYSTRONS OR TWT ELECTRICALLY	0	0	0
P1051 P3-18 DO YOU TUNE KLYSTRONS OR TWT MECHANICALLY	0	0	0
P1052 P3-19 DO YOU PERFORM OPERATIONAL CHECKS OF KLYSTRONS OR TWT	0	0	0
P1053 P3-20 DO YOU TROUBLESHOOT KLYSTRONS OR TWT	0	0	0
P1054 P3-21 DO YOU REMOVE OR REPLACE COMPLETE KLYSTRON OR TWT	0	0	0
P1055 P3-22 DO YOU REMOVE OR REPLACE KLYSTRON OR TWT COMPONENTS	0	0	0
P1056 P3-23 DO YOU INSPECT PARAMETRIC AMPLIFIERS	0	0	0
P1057 P3-24 DO YOU CLEAN PARAMETRIC AMPLIFIERS	0	0	0
P1058 P3-25 DO YOU ADJUST PARAMETRIC AMPLIFIERS	0	0	0

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK	SPC 051	SPC 052	SPC 054
P1059 P3-26 DO YOU TUNE PARAMETRIC AMPLIFIERS	0	0	0
P1060 P3-27 DO YOU PERFORM OPERATIONAL CHECKS OF PARAMETRIC AMPLIFIERS	0	0	0
P1061 P3-28 DO YOU TROUBLESHOOT PARAMETRIC AMPLIFIERS	0	0	0
P1062 P3-29 DO YOU REMOVE OR REPLACE COMPLETE PARAMETRIC AMPLIFIER	0	0	0
P1063 P3-30 DO YOU REMOVE OR REPLACE PARAMETRIC AMPLIFIER COMPONENTS	0	0	0
P1064 P3-31 DO YOU INSPECT MAGNETRONS	0	0	0
P1065 P3-32 DO YOU CLEAN MAGNETRONS	0	0	0
P1066 P3-33 DO YOU ADJUST MAGNETRONS	0	0	0
P1067 P3-34 DO YOU TUNE MAGNETRONS	0	0	0
P1068 P3-35 DO YOU PERFORM OPERATIONAL CHECKS OF MAGNETRONS	0	0	0
P1069 P3-36 DO YOU TROUBLESHOOT MAGNETRONS	0	0	0
P1070 P3-37 DO YOU REMOVE OR REPLACE COMPLETE MAGNETRON	0	0	0
P1071 P3-38 DO YOU REMOVE OR REPLACE MAGNETRON COMPONENTS	0	0	0
P1072 P3-39 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS COLLECTOR PLATES	0	0	0
P1073 P3-40 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS CATCHER CAVITIES	0	0	0
P1074 P3-41 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS CATCHER GRIDS	0	0	0
P1075 P3-42 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS FEEDBACK LOOPS	0	0	0
P1076 P3-43 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS DRIFT SPACES	0	0	0
P1077 P3-44 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS BUNCHER GRIDS	0	0	0
P1078 P3-45 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS BUNCHER CAVITIES	0	0	0
P1079 P3-46 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS CONTROL GRIDS	0	0	0
P1080 P3-47 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS CATHODES	0	0	0
P1081 P3-48 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON REPELLER (REFLECTOR) PLATES	0	0	0
P1082 P3-49 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON GRIDS	0	0	0
P1083 P3-50 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON GRID CAVITY GAPS	0	0	0
P1084 P3-51 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON RESONANT CAVITIES	0	0	0
P1085 P3-52 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON MAGNETIC COUPLING LOOPS	0	0	0
P1086 P3-53 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON FILAMENTS	0	0	0
P1087 P3-54 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON CATHODES	0	0	0

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

Dy-TSK	SPC 051	SPC 052	SPC 054
P1088 P3-55 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON OUTPUT LEADS	0	0	0
P1089 P3-56 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES FILAMENTS	0	0	0
P1090 P3-57 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES CATHODES	0	0	0
P1091 P3-58 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES MODULATOR GRIDS	0	0	0
P1092 P3-59 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES ANODES	0	0	0
P1093 P3-60 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES HELIXES	0	0	0
P1094 P3-61 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES COLLECTORS	0	0	0
P1095 P3-62 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES MAGNETS	2	2	2
P1096 P3-63 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES ATTENUATORS	0	0	0
P1097 P3-64 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER FERRITE CIRCULATORS	0	0	0
P1098 P3-65 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER SIGNAL CAVITIES	2	0	0
P1099 P3-66 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER IDLER CAVITIES	0	0	0
P1100 P3-67 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER VARACTOR DIODES	0	0	0
P1101 P3-68 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER FERRITE ISOLATORS	0	0	0
P1102 P3-69 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER REVERSE- BIAS BATTERIES	0	0	0
P1103 P3-70 DO YOU PERFORM TASKS ON ANODES	0	0	0
P1104 P3-71 DO YOU PERFORM TASKS ON ANODE COOLING PINS	0	0	0
P1105 P3-72 DO YOU PERFORM TASKS ON COUPLING LOOPS	0	0	0
P1106 P3-73 DO YOU PERFORM TASKS ON HEATER LEADS	0	0	0
P1107 P3-74 DO YOU PERFORM TASKS ON RESONANT CAVITIES	0	0	0
P1108 P3-75 DO YOU PERFORM TASKS ON CATHODES	0	0	0
P1109 P3-76 DO YOU PERFORM TASKS ON MAGNETS	0	0	0
Q1110 Q1-01 DO YOU USE OR REFER TO STORAGE REGISTERS	0	0	0
Q1111 Q1-02 DO YOU USE OR REFER TO SHIFT REGISTERS	0	0	0
Q1112 Q1-03 DO YOU USE OR REFER TO LOGIC SYMBOLS OF SHIFT REGISTERS	0	0	0
Q1113 Q1-04 DO YOU USE OR REFER TO LOGIC SYMBOLS OF STORAGE REGISTERS	0	0	0
Q1114 Q1-05 DO YOU TRACE THE DATA FLOW THROUGH LOGIC DIAGRAMS OF SHIFT REGISTERS	0	0	0
Q1115 Q1-06 DO YOU TRACE THE DATA FLOW THROUGH LOGIC DIAGRAMS OF OTHER TYPE OF REGISTERS	2	2	2

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK	SPC 051	SPC 052	SPC 054
Q1116 Q1-07 DO YOU DETERMINE THE STATE OF EACH FLIP-FLOP OF A SHIFT REGISTER AFTER A SPECIFIED NUMBER OF SHIFT PULSES HAVE PASSED	0	0	0
Q1117 Q2-01 DO YOU WORK WITH DIGITAL COUNTERS, REGISTERS, OR STORAGE DEVICES IN YOUR PRESENT JOB	3	3	3
Q1118 Q2-02 DO YOU USE OR REFER TO DELAY LINES	2	2	2
Q1119 Q2-03 DO YOU USE OR REFER TO MAGNETIC CORES	0	0	0
Q1120 Q2-04 DO YOU USE OR REFER TO MAGNETIC DRUMS	0	0	0
Q1121 Q2-05 DO YOU USE OR REFER TO MAGNETIC TAPES	0	0	0
Q1122 Q2-06 DO YOU USE OR REFER TO ACCESS TIME OR SPEED OR MEMORY SYSTEMS	0	0	0
Q1123 Q2-07 DO YOU USE OR REFER TO WORD CAPACITY OF MEMORY SYSTEMS	0	0	0
Q1124 Q2-08 DO YOU USE OR REFER TO VOLATILITY OF MEMORY SYSTEMS	0	0	0
Q1125 Q2-09 DO YOU USE OR REFER TO LOGIC SYMBOL OF DELAY LINES	0	0	0
Q1126 Q3-01 IN YOUR PRESENT JOB, DO YOU WORK WITH DIGITAL-TO- ANALOG (D/A) CONVERTERS, ANALOG-TO-DIGITAL (A/D) CONVERTERS, OR BINARY-TO-DECIMAL READOUT CONVERTERS	0	0	0
Q1127 Q3-02 DO YOU COMPUTE OUTPUT VOLTAGES FOR ELECTROMECHANICAL DIGITAL-TO-ANALOG (D/A) CONVERTERS FOR GIVEN INPUT VOLTAGES	0	0	0
Q1128 Q3-03 DO YOU USE OR REFER TO THE GENERAL RULE THAT THE COUNT IN ELECTROMECHANICAL DIGITAL-TO-ANALOG (D/A) CONVERTERS IS DETERMINED BY ADDING THE DENOMINATORS OF THE RESISTORS	0	0	0
Q1129 Q3-04 DO YOU COMPUTE ANALOG VOLTAGES FOR GIVEN BINARY COUNTS IN ELECTRONIC DIGITAL-TO-ANALOG (D/A) CONVERTERS	0	0	0
Q1130 Q3-05 DO YOU PERFORM SAMPLE FUNCTION TASKS ON VARIABLE TIME ANALOG-TO-DIGITAL (A/D) CONVERTER CIRCUITS	0	0	0
Q1131 Q3-06 DO YOU PERFORM HOLD FUNCTION TASKS ON VARIABLE TIME ANALOG-TO-DIGITAL (A/D) CONVERTER CIRCUITS	0	0	0
Q1132 Q3-07 DO YOU PERFORM COMPARE FUNCTION TASKS ON VARIABLE TIME ANALOG-TO-DIGITAL (A/D) CONVERTER CIRCUITS	0	0	0
Q1133 Q3-08 DO YOU PERFORM DIGITIZE FUNCTION TASKS ON VARIABLE TIME ANALOG-TO-DIGITAL (A/D) CONVERTER CIRCUITS	0	0	0
Q1134 Q3-09 DO YOU PERFORM DON'T REMEMBER WHICH FUNCTION TASKS ON VARIABLE TIME ANALOG-TO-DIGITAL (A/D) CONVERTER CIRCUITS	0	0	0
Q1135 Q3-10 DO YOU USE OR REFER TO SAMPLE FUNCTION OF A/D CONVERTERS	0	0	0
Q1136 Q3-11 DO YOU USE OR REFER TO HOLD FUNCTION OF A/D CONVERTERS	0	0	0
Q1137 Q3-12 DO YOU USE OR REFER TO COMPARE FUNCTION OF A/D CONVERTERS	0	0	0
Q1138 Q3-13 DO YOU USE OR REFER TO DIGITAL FUNCTION OF A/D CONVERTERS	0	0	0
Q1139 Q3-14 DO YOU PERFORM ANY TASKS ON MECHANICAL ANALOG-TO- DIGITAL (A/D) CONVERTERS	0	0	0

STORAGE DEVICES

DIGITAL TO ANALOG CONVERTERS

PCT MBRS RESPONDING *YES* BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK	SPC 051	SPC 052	SPC 054	
R1140 R1-01 DO YOU WORK WITH PHANTASTRON CIRCUITRY IN YOUR PRESENT JOB	0	0	0	PHANTASTRONS
R1141 R2-01 IN YOUR PRESENT JOB DO YOU WORK WITH SCHMITT TRIGGER CIRCUITS	13	13	12	
R1142 R2-02 DO YOU TRACE DATA FLOW THROUGH SCHMITT TRIGGER SCHEMATIC DIAGRAMS	11	11	10	SCHMITT TRIGGERS
R1143 R2-03 DO YOU USE OR REFER TO SCHMITT TRIGGER LOGIC SYMBOLS	11	11	10	
R1144 R3-01 IN YOUR PRESENT JOB DO YOU FABRICATE MULTICONDUCTOR CABLES	5	5	5	
R1145 R3-02 DO YOU FABRICATE COAXIAL CABLES	2	2	2	CABLE FABRICATION
R1146 S1-01 IN YOUR PRESENT JOB DO YOU PERFORM ANY TASKS ON VISUAL READOUT SYSTEMS	11	11	10	
S1147 S1-02 DO YOU PERFORM ANY TASKS ON NIXIE LIGHTS OR NIXIE LIGHT DECODER SYSTEMS	0	0	0	INPUT/OUTPUT DEVICES
S1148 S1-03 DO YOU ANALYZE NIXIE LIGHT DECODER SYSTEMS USING BOOLEAN ALGEBRA	0	0	0	
S1149 S2-01 DO YOU WORK WITH PHOTO TUBES IN YOUR PRESENT JOB	0	0	0	PHOTO SENSITIVE DEVICES
S1150 S3-01 IN YOUR PRESENT JOB DO YOU WORK WITH CHOPPER CIRCUITS	3	3	2	
S1151 S3-02 DO YOU MEASURE EXCITATION FREQUENCIES	2	2	2	
S1152 S3-03 DO YOU MEASURE VOLTAGE-CURRENT PHASE RELATIONSHIPS	2	2	2	
S1153 S3-04 DO YOU USE OR REFER TO EXCITATION FREQUENCIES	2	2	2	
S1154 S3-05 DO YOU USE OR REFER TO VOLTAGE-CURRENT PHASE RELATIONSHIPS	2	2	2	SYNCHRONOUS VIBRATIONS (CHOPPER CIRCUITS)
S1155 S3-06 DO YOU USE SERVOS IN CONJUNCTION WITH CHOPPER CIRCUIT OPERATION	3	3	2	
S1156 S3-07 DO YOU USE DETECTORS IN CONJUNCTION WITH CHOPPER CIRCUIT OPERATION	2	2	2	
S1157 S3-08 DO YOU USE ERROR SIGNAL DEVICES IN CONJUNCTION WITH CHOPPER CIRCUIT OPERATION	0	0	0	
S1158 S3-09 DO YOU USE COMPARISON CIRCUITS IN CONJUNCTION WITH CHOPPER CIRCUIT OPERATION	0	0	0	
T1159 T1-01 DOES YOUR PRESENT JOB INVOLVE ANY TASKS DEALING WITH INFRARED SYSTEMS	0	0	0	
T1160 T1-02 DO YOU INSPECT INFRARED SYSTEMS	0	0	0	
T1161 T1-03 DO YOU CLEAN INFRARED SYSTEMS	0	0	0	
T1162 T1-04 DO YOU ADJUST OR CALIBRATE INFRARED SYSTEMS	0	0	0	
T1163 T1-05 DO YOU OPERATE INFRARED SYSTEMS	0	0	0	INFRARED
T1164 T1-06 DO YOU TROUBLESHOOT WIRE CONNECTIONS OF INFRARED SYSTEMS	0	0	0	
T1165 T1-07 DO YOU TROUBLESHOOT MAJOR ASSEMBLIES OF INFRARED SYSTEMS	0	0	0	
T1166 T1-08 DO YOU TROUBLESHOOT DOWN TO INFRARED SYSTEM COMPONENT PARTS	0	0	0	
T1167 T1-09 DO YOU REMOVE OR REPLACE MAJOR ASSEMBLIES OF INFRARED SYSTEMS	0	0	0	
T1168 T1-10 DO YOU REMOVE OR REPLACE INFRARED SYSTEM COMPONENT PARTS	0	0	0	

PCT 48HS RESPONDING *YES* BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK		SPC 051	SPC 052	SPC 054
TI-169 TI-11	DO YOU USE OR REFER TO FAR REGION	0	0	0
TI-170 TI-12	DO YOU USE OR REFER TO INTERMEDIATE REGION	0	0	0
TI-171 TI-13	DO YOU USE OR REFER TO NEAR REGION	0	0	0
TI-172 TI-14	DO YOU USE OR REFER TO MICRON	0	0	0
TI-173 TI-15	DO YOU USE OR REFER TO GRAY BODIES	0	0	0
TI-174 TI-16	DO YOU USE OR REFER TO BLACK BODIES	0	0	0
TI-175 TI-17	DO YOU USE OR REFER TO ABSORPTION	0	0	0
TI-176 TI-18	DO YOU USE OR REFER TO SCATTERING	0	0	0
TI-177 TI-19	DO YOU USE OR REFER TO ABSOLUTE ZERO	0	0	0
TI-178 TI-20	DO YOU PERFORM TASKS ON BLITZ	0	0	0
TI-179 TI-21	DO YOU PERFORM TASKS ON TARGET BUTTONS	0	0	0
TI-180 TI-22	DO YOU PERFORM TASKS ON ERECTOR LENSES	0	0	0
TI-181 TI-23	DO YOU PERFORM TASKS ON OCULAR LENSES	0	0	0
TI-182 TI-24	DO YOU PERFORM TASKS ON CORRECTION LENSES	0	0	0
TI-183 TI-25	DO YOU PERFORM TASKS ON FILTERS	0	0	0
TI-184 TI-26	DO YOU PERFORM TASKS ON SPHERICAL MIRRORS	0	0	0
TI-185 TI-27	DO YOU PERFORM TASKS ON PLANE MIRRORS	0	0	0
TI-186 T2-01	DOES YOUR PRESENT JOB INVOLVE ANY TASKS DEALING WITH LASERS	0	0	0
TI-187 T2-02	DO YOU INSPECT LASER SYSTEMS	0	0	0
TI-188 T2-03	DO YOU CLEAN LASER SYSTEMS	0	0	0
TI-189 T2-04	DO YOU OPERATE LASER SYSTEMS	0	0	0
TI-190 T2-05	DO YOU OPERATE LASER SYSTEMS	0	0	0
TI-191 T2-06	DO YOU TROUBLESHOOT WIRE CONNECTIONS OF LASER SYSTEMS	0	0	0
TI-192 T2-07	DO YOU TROUBLESHOOT MAJOR ASSEMBLIES OF LASER SYSTEMS	0	0	0
TI-193 T2-08	DO YOU TROUBLESHOOT TO COMPONENT PARTS OF LASER SYSTEMS	0	0	0
TI-194 T2-09	DO YOU REMOVE OR REPLACE MAJOR ASSEMBLIES OF LASER SYSTEMS	0	0	0
TI-195 T2-10	DO YOU REMOVE OR REPLACE COMPONENT PARTS OF LASER SYSTEMS	0	0	0
TI-196 T2-11	DO YOU USE OR REFER TO ANGSTROMS (A)	0	0	0
TI-197 T2-12	DO YOU USE OR REFER TO ELECTRON ENERGY LEVELS	0	0	0
TI-198 T2-13	DO YOU USE OR REFER TO GROUND STATE	0	0	0
TI-199 T2-14	DO YOU USE OR REFER TO EXCITED STATE	0	0	0
TI-200 T2-15	DO YOU USE OR REFER TO PACKET OF RADIATION	0	0	0
TI-201 T2-16	DO YOU USE OR REFER TO PHOTONS	0	0	0
TI-202 T2-17	DO YOU USE OR REFER TO SPONTANEOUS EMISSION	0	0	0
TI-203 T2-18	DO YOU USE OR REFER TO STIMULATED EMISSION	0	0	0
TI-204 T2-19	DO YOU USE OR REFER TO COHERENCE OR INCOHERENCE	0	0	0
TI-205 T2-20	DO YOU USE OR REFER TO INVERSION LEVEL	0	0	0
TI-206 T2-21	DO YOU USE OR REFER TO MONOCHROMATIC	0	0	0
TI-207 T2-22	DO YOU WORK WITH ACTIVE MATERIALS	0	0	0
TI-208 T2-23	DO YOU WORK WITH PUMPING SOURCES	0	0	0
TI-209 T2-24	DO YOU WORK WITH FULL SILVERED (100% REFLECTIVE) MIRRORS	0	0	0

LASERS

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	DY-TSK	SPC 051	SPC 052	SPC 054
T1210	T2-25 DO YOU WORK WITH HALF SILVERED (92% REFLECTIVE) MIRRORS	0	0	0
T1211	T2-26 DO YOU WORK WITH HELICAL FLASHTUBES	0	0	0
T1212	T2-27 DO YOU WORK WITH RUBY	0	0	0
T1213	T2-28 DO YOU WORK WITH HELIUM-NEON	0	0	0
T1214	T2-29 DO YOU WORK WITH HELIUM-XENON	0	0	0
T1215	T2-30 DO YOU WORK WITH XENON	0	0	0
T1216	T2-31 DO YOU WORK WITH CESIUM-HELIUM	0	0	0
T1217	T2-32 DO YOU WORK WITH ARGON	0	0	0
T1218	T2-33 DO YOU WORK WITH NEODYMIUM IN GLASS	0	0	0
T1219	T2-34 DO YOU WORK WITH GALLIUM ARSENIDE	0	0	0
T1220	T3-01 IN YOUR PRESENT JOB DO YOU WORK WITH DISPLAY TUBES, SUCH AS DIRECT VIEW STORAGE (DVST) OR MULTIPLE MODE STORAGE TUBES (MMST)			DISPLAY TUBES
T1221	T3-02 DO YOU INSPECT DVST OR MMST	0	0	0
T1222	T3-03 DO YOU CLEAN DVST OR MMST	0	0	0
T1223	T3-04 DO YOU ADJUST OR CALIBRATE DVST OR MMST	0	0	0
T1224	T3-05 DO YOU OPERATE SYSTEMS THAT CONTAIN DVST OR MMST	0	0	0
T1225	T3-06 DO YOU TROUBLESHOOT DVST OR MMST	0	0	0
	CIRCUITS			
T1226	T3-07 DO YOU REMOVE OR REPLACE DVST OR MMST TUBES FROM MAJOR ASSEMBLIES OR UNITS	0	0	0
T1227	T3-08 DO YOU PERFORM TASKS THAT MAKE IT NECESSARY TO NAME THE VARIOUS ELEMENTS OF DVST	0	0	0
T1228	T3-09 DO YOU PERFORM TASKS THAT MAKE IT NECESSARY TO NAME THE VARIOUS ELEMENTS OF MMST	0	0	0
T1229	T3-10 DO YOU PERFORM TASKS ON FLOOD GUNS	0	0	0
T1230	T3-11 DO YOU PERFORM TASKS ON WRITE GUNS	0	0	0
T1231	T3-12 DO YOU PERFORM TASKS ON ATTACK GUNS	0	0	0
T1232	T3-13 DO YOU PERFORM TASKS ON ERASE GUNS	0	0	0
T1233	T3-14 DO YOU PERFORM TASKS ON STORAGE GRIDS	0	0	0
U1234	U1-01 IN YOUR PRESENT JOB, DO YOU PERFORM ANY PROGRAMMING TASKS	0	0	PROGRAMMING
U1235	U1-02 DO YOU USE OR REFER TO DECIMAL SYSTEMS	0	0	0
U1236	U1-03 DO YOU USE OR REFER TO PROGRAMS	0	0	0
U1237	U1-04 DO YOU USE OR REFER TO HEXIDECIMAL SYSTEMS	0	0	0
U1238	U1-05 DO YOU USE OR REFER TO 8--2-1 SYSTEMS	0	0	0
U1239	U1-06 DO YOU USE OR REFER TO FOUR SYSTEMS	0	0	0
U1240	U1-07 DO YOU USE OR REFER TO BINARY SYSTEMS	0	0	0
U1241	U1-08 DO YOU USE OR REFER TO TIME-SHARING	0	0	0
U1242	U1-09 DO YOU USE OR REFER TO DATA WORDS	0	0	0
U1243	U1-10 DO YOU USE OR REFER TO ADDRESS WORDS	0	0	0
U1244	U1-11 DO YOU USE OR REFER TO ADDRESS/SUBADDRESS	0	0	0
U1245	U1-12 DO YOU USE OR REFER TO STEERING/INFORMATION	0	0	0
U1246	U1-13 DO YOU USE OR REFER TO INFORMATION WORDS	0	0	0
U1247	U1-14 DO YOU PERFORM TASKS ON SINGLE LEVEL PROGRAMMING	0	0	0
U1248	U1-15 DO YOU PERFORM TASKS ON MULTI-LEVEL PROGRAMMING	0	0	0

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

UY-TSK

		SPC 051	SPC 052	SPC 054
U1249	U1-16 DO YOU PERFORM TASKS ON INPUT DEVICES	0	0	0
U1250	U1-17 DO YOU PERFORM TASKS ON STORAGE DEVICES	0	0	0
U1251	U1-18 DO YOU PERFORM TASKS ON ARITHMETIC SECTIONS	0	0	0
U1252	U1-19 DO YOU PERFORM TASKS ON CONTROL SECTIONS	0	0	0
U1253	U1-20 DO YOU PERFORM TASKS ON OUTPUT DEVICES	0	0	0
U1254	U1-21 DO YOU PERFORM TASKS ON POWER SUPPLIES	0	0	0
U1255	J2-01 DO YOU USE DECIBELS TO EXPRESS AMPLIFICATION AND ATTENUATION	62	62	64
U1256	J2-02 DO YOU USE LOGARITHMS TO COMPUTE OUTPUT POWER IN DECIBELS	2	2	2
U1257	J2-03 DO YOU USE LOGARITHMS TO COMPUTE ATTENUATION IN DECIBELS	2	2	2
U1258	J2-04 DUMMY TASK TO IDENTIFY INCUMBENTS WHO PERFORMED NO TASKS	3	3	3

DE AND POWER RATIOS

SUPPLEMENTARY

INFORMATION

A044 645

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER AFPT 90-362-222	2. GOVT ACCESSION NO. AD A044645/65L	3. RECIPIENT'S CATALOG NUMBER
4. TITLE *(and Subtitle)* Missile Control Communications System Specialist AFSC 36253		5. TYPE OF REPORT & PERIOD COVERED FINAL April 77 - June 77
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(*s*) Thomas J. O'Connor Frederick B. Bower, Jr.		8. CONTRACT OR GRANT NUMBER(*s*)
9. PERFORMING ORGANIZATION NAME AND ADDRESS Occupational Survey Branch USAF Occupational Measurement Center Lackland AFB TX 78236		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS N/A
11. CONTROLLING OFFICE NAME AND ADDRESS SAME AS ITEM 9		12. REPORT DATE 15 September 1977
		13. NUMBER OF PAGES 44
14. MONITORING AGENCY NAME & ADDRESS*(if different from Controlling Office)*		15. SECURITY CLASS. *(of this report)* UNCLASSIFIED
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT *(of this Report)*

Approved for public release; distribution unlimited

17. DISTRIBUTION STATEMENT *(of the abstract entered in Block 20, if different from Report)*

18. SUPPLEMENTARY NOTES

19. KEY WORDS *(Continue on reverse side if necessary and identify by block number)*

Electronic principles   Electronics
Basic electronics   Air Force Training
Avionics   Teaching methods
Electronic equipment   Training
Electronic technicians

20. ABSTRACT *(Continue on reverse side if necessary and identify by block number)*

This report summarizes the results of the administration of the Electronic Principles Inventory to airmen assigned as Missile Control Communications Systems Specialist (AFSC 36253). The report gives a detailed listing of the technical tasks and knowledge needed to perform the jobs within the specialty or career ladder.

CONTINUED

DD FORM 1 JAN 73 **1473** EDITION OF 1 NOV 65 IS OBSOLETE

This specialty has the following functions:

Maintains and repairs missile control communications equipment and systems. Performs preventive maintenance routines. Maintains, replaces and repairs missile control communications systems and components. Maintains inspection and maintenance records. Supervises missile control communications systems repair personnel.